Metalwork from Central Anatolia in the Assyrian Colony Period: A Review in the Light of Finds from the Level IIIc Destruction at Kaman-Kalehöyük

TSUNEKI, MAI

Metalwork from Central Anatolia in the Assyrian Colony Period: A Review in the Light of Finds from the Level IIIc Destruction at Kaman-Kalehöyük

Mai Tsuneki

MA by Research
Department of Archaeology
Durham University
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‘Metalwork from Central Anatolia in the Assyrian Colony Period: A Review in the Light of Finds from the Level IIIc Destruction at Kaman-Kalehöyük’, by Mai Tsuneki

Abstract

The subject of bronze metalworking has been a topic of debate for many decades. Previous research has focused on typology, while in recent years there has been an increasing interest in chemical analyses of bronze objects and the raw materials used to make the objects. However, much uncertainty still exists about the relationship between bronze artefacts and the financial value of metal. This study thus has three primary aims: 1) to develop an understanding of the comparison of bronze artefacts from central Anatolia and from the neighbouring regions; 2) to determine the influence that each type of context, such as graves, settlements and destruction levels, have on bronze artefacts; and 3) to ascertain the price and ‘value’ of commodities in the early second millennium BC. The key research question of this study is whether or not metal assemblages in central Anatolia influenced their contexts. First, the typology of bronze artefacts in central Anatolia, from sites such as Alishar Höyük, Boğazköy, Kaman-Kalehöyük and Kültepe, will be established and compared with sites in the neighbouring regions, south-east and west Anatolia, Mesopotamia, the Levant and Egypt. The first finding was that metal types did not vary greatly between regions, suggesting that the bronze typology was shared over a wide area. The second finding was that bronze items and types differ according to context. The last finding was that the price of metal varied from one area to another because the importance of trade goods differed across regions. The evidence from this study suggests that the metal industry was well organised in central Anatolia. However, the current study has examined and compared only types, and it was not determined whether or not the artefacts concerned were tin-bronze. This work thus contributes to existing knowledge on the typology of bronze artefacts by considering the value of metal.

Contents

Declaration

This dissertation develops the work presented in Mai Tsuneki's dissertation for the taught degree of Master of Arts in the Department of Global Asia of Kokushikan University, Japan, in 2009, titled: 'The Study of Bronze Artefacts in Central Anatolia in the Assyrian Colony Period: Focus on Sickles, Daggers and Spearheads in Stratum IIIc at Kaman-Kalehöyük', and was submitted for the degree of Master of Arts by Research in the Department of Archaeology of Durham University, England, on the 18th of March 2014.

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8th February 2014

I am happy to confirm that Mai Tsuneki has been granted permission to use unpublished information, including plans and artefact drawings from Stratum IIIc of the Japanese excavations at Kaman-Kalehöyük within her Durham University Masters dissertation. In addition, I permit that the information is shown on the Durham e-theses.

Dr Sachihiro Omura

Director of Japanese Institute of Anatolian Archaeology

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Chapter 1: Introduction

1.0. Introduction

This research originates in work undertaken for my dissertation for the degree of Master of Arts in the Department of Global Asia at Kokushikan University, Japan, in 2009 entitled 'The Study of Bronze Artefacts in Central Anatolia in the Assyrian Colony Period: Focus on Sickles, Daggers and Spearheads in Stratum IIIc at Kaman-Kalehöyük'. The Kaman-Kalehöyük level relevant to this study, which was destroyed by fire, has produced well-stratified materials including several bronze objects. In the burnt destruction level, which is securely dated towards the end of the so-called "Assyrian Colony" period in Anatolian historical terms, the bronze objects themselves have been found scattered on the floors of houses and courtyards, i.e., *in situ*, comprising a typical bronze tool assemblage of the particular date. It goes without saying that they are archaeologically important materials providing a framework for comparative study. Thus the present writer tries to compare the bronze objects of Kaman-Kalehöyük with those from other sites, where in many cases, bronzes come from graves/tombs in association with burials in contrast with the Kaman-Kalehöyük case, and makes an attempt to account for their similarities and differences. In addition to this, another attempt will be made, which is to explicate uses of bronzes with regard to the Kaman-Kalehöyük objects. The latter work introduced the site of Kaman-Kalehöyük and described and illustrated its bronze artefacts, especially the weapons and tools *in situ* in destruction level IIIc. In addition, these objects

were compared typologically with bronze artefacts of similar date found at the central Anatolian sites of Alishar Höyük, Böğazköy and Kültepe. The results indicated that bronze artefact types at Kaman-Kalehöyük were similar to those found at Böğazköy. On the other hand, the bronze artefacts from Alishar Höyük resembled more closely those from Kültepe. However, it is worth noting that these comparisons were based upon typology alone and took little account of the different archaeological contexts from which the material at each site had been recovered.

1.1. Main purpose of the dissertation and geographical extent

The present dissertation therefore seeks to build upon and develop further the evidence from Kaman-Kalehöyük by considering three new topics.

1. The relationship between the metal artefacts from Kaman-Kalehöyük and other central Anatolian sites, and those encountered at contemporary sites in north Syria/north Mesopotamia. This matter is examined in order to assess the extent to which a distinctive central Anatolian metal industry can be defined and to examine the relationship between the wider regional economy and metalworking activities.
2. The unusual taphonomy of the Kaman-Kalehöyük material, which is associated with a devastating destruction. This is relevant in considering the influence of context upon the nature of metalwork

assemblages from key sites in the region – in particular, this aim will be accomplished by comparing the composition of a 'living' assemblage, such as that associated with the destruction at Kaman-Kalehöyük, to burial metalwork and the more usual settlement assemblages.

3. Chemical analysis of metal artefacts from Kaman-Kalehöyük. This has indicated that a range of copper alloying techniques were in use at the site. In the light of texts from the Assyrian colony period that refer to the value of different metals, it seems useful to explore some of the implications of this evidence for the 'value' of metal artefacts produced by different alloying methods – a matter which generally receives little attention in studies of metal technology and composition.

The main geographical area covered by this research is central Anatolia, and the chronological span considered is the early second millennium BC, especially the so-called 'Assyrian Colony period', c. 1930–1750 BC. This period is of particular interest because of the existence of an international trade network, run by Assyrian merchants, between north Mesopotamia and Anatolia. In addition, there was also a local trade network run by Anatolian merchants. The connections between these two groups of merchants are worthy of consideration, and this study will thus focus on both international trade and local trade within Anatolia. A wide area of Anatolia – central, northern, southern, eastern and western – will be considered.

1.2. Metalworking in Anatolia prior to the second millennium BC

1.2.1. Previous metal studies and current research trends

Anatolia, historically, was an area particularly suited to metallurgy because of its rich mineral and forest resources that provided both raw materials and fuel (Muhly 2011: 858). A variety of mineral deposits, such as copper, silver, gold, zinc, antimony, arsenic and iron, were found here (Yener *et al.* 1996: 375) and their location has been charted on a map (Bayburtoğlu and Yıldırım 2008: 44, map and fig. 1). The copper and tin resources will be discussed in Chapter 2. Recent studies of tin resources focus on the Taurus Mountains (Pernicka 1998; Yalçın 2003) and Transcaucasia (Parzinger 2002; Weisgerber and Cierny 2002).

Efe (2002: 49) points out that there has been limited research on metalwork, especially on matters of metal typology and technology. However, a number of researchers have undertaken research on metalwork typologies from Anatolia. The best-known examples are the works of Deshayes (1960), Erkanal (1977) and Müller-Karpe (1994). Their research is focused mainly on bronze weapons such as axes, daggers and spearheads. Müller-Karpe's research, in particular, pays attention to moulds, while Klein (1992) has undertaken a comprehensive study of pins. Recently, Gernez (2007) has studied weapons over a wide swathe of the Near East, while Blackwell (2011) has examined metal tools from the Middle to the Late Bronze Age in the Aegean, eastern Mediterranean and Anatolia. These

investigations again take a typological approach and provide valuable collections of comparative material on a regional scale. Thus, it is possible to understand the distribution of bronze artefact types via traditional methods of study. However, it is also necessary to form a chronological sequence of bronze artefacts so that we can examine their development over time.

A particular problem with metalwork is that it can be recycled, which means that it can be difficult to find large numbers of metal artefacts at sites and that the record risks being distorted because it includes large numbers of grave objects, which may not be entirely representative of those in use on a daily basis.

In recent years a number of researchers have been particularly interested in the analysis of raw material sources and methods of manufacturing. Anatolian copper and copper artefacts were analysed on a substantial scale by Esin (1969), although the results are now considered out-of-date and potentially unreliable. More recently, Junghans and Sangmeister included some material from Anatolia among that of the Studien zu den Anfängen der Metallurgie (SAM) Project, which covered around 22,000 copper objects of Bronze Age date (cf. Muhly 2008). It is necessary, therefore, for traditional archaeological research such as typological and chronological studies to make a major contribution to this analysis, but I will also attempt to shed light on this information with technological and contextual information.

1.2.2. Metallurgy of the fourth and third millennia BC in Anatolia

Metalworking has a long history of development in the region. The first examples appeared from Çayönü in south-eastern Anatolia, where some copper artefacts were found that dated to c. 8500 BC (Muhly 1988: 5–6; Yakar 2011: table 4.1 on 59). Over time, the technology of metallurgy in Anatolia developed, and by the fourth millennium BC documented arsenical copper artefacts appeared, with tin-bronzes appearing c. 2600 BC (Sagona and Zimansky 2009: 204–5). However, the chronology of the introduction and development of metalworking differed across the various regions of Anatolia.

Table 1.1. Comparison of EBA chronology and stratigraphy at key Anatolian sites.

(Source: Yakar 2011: 70–71 and table 4.5)

Period	West	Central	North	Cilicia	East
2000BC EBA IIIc	Troy IV	Boğazköy Vf Alacahöyük 5 Alishar 12T Kültepe 11 Acemhöyük 8	İkiztepe Mound I Cemetery	Tarsus	Arslantepe VID
2150BC EBA IIIb	Troy III–IV	Boğazköy Vc Alacahöyük 6 Alishar 12T 6M Kültepe 12 Acemhöyük	İkiztepe Mound I Cemetery	Tarsus increase in north and west contacts	Arslantepe VID
2300BC EBA IIIa	Troy III Troy IIg	Alacahöyük 7 Alishar 12T 7M Kültepe 13 Acemhöyük 9	İkiztepe Mound I Cemetery	Tarsus cultural implant from the west	Arslantepe VID
2500BC EBA IIb		Alacahöyük 8 Alishar 13T 8M Kültepe 14 Acemhöyük 10	İkiztepe	Tarsus	Arslantepe VIC2
2600BC EBA IIa	Troy IIa	Alishar 14T Kültepe 14	İkiztepe	Tarsus from village to town	Arslantepe VIC1
2700BC EBA Ib	Troy I final ca. 2719	Alacahöyük Alishar 12M	İkiztepe	Tarsus	Arslantepe VIB2
2900BC EBA Ia	Troy Ia ca. 2920	Alacahöyük Alishar 19M–	İkiztepe	Tarsus	Arslantepe VIB1

1.2.2.1. Eastern Anatolia

As mentioned above, initial traces of metalworking was found in Çayönü, after which arsenical copper artefacts were discovered in widespread use in the first half of the fourth millennium BC in Anatolia, including Malatya and nearby Elazığ. An average arsenic content of 2–2.5% was found by general chemical analysis (Sagona and Zimansky 2009: 205), indicating that the arsenical copper artefacts were those in mainstream use, rather than pure copper ones. For example,

Arslantepe phases VI A and B2, contemporary with the late fourth to the beginning of the third millennium BC, were two of the most important periods for metalworking, and a large quantity of metal artefacts have been excavated from this period (Nocera 2010: 264–5). In addition, metal artefacts are often found near royal tombs in Arslantepe (eastern Anatolia) before the fourth millennium BC (Nocera 2010: 273). However, despite all these factors, bronze artefacts are not often found in the settlements at Arslantepe.

Moreover, the bronze alloy as it is generally understood had not developed fully in the Early Bronze Age I period, c. 2900–2700 BC. Most of the artefacts from this period were made of arsenical copper. Nonetheless, metal workshops were found in the settlement at Arslantepe dating to the Late Chalcolithic and Early Bronze Age I periods. This was a transition period in which tin-bronze artefacts were produced. In addition, Yakar (2002: 21) shows that metalworking techniques improved as a result of advancing technology in mining and smelting in the Early Bronze Age. However, he also (2002: 21) states that, even though local smiths and workshops existed, it is difficult to demonstrate that all bronze products were made in these local workshops. In addition, Nocera (2010: 267, 274) points out that smiths had mastered sophisticated decorative techniques and that metal artefacts were supplied to the central administration and for wealthy burials from what was presumably a complex of smiths and workshops in Arslantepe. However, most of the population had access to some metal products, including

pins, rings and tools such as chisels and punchers, examples of which were found in phase VI B2 at Arslantepe (Nocera 2010: 273). These metal artefacts were alloyed low-arsenic copper (Nocera 2010: 267).

In addition, Yakar (2002: 23) argues that the development of metalworking in Mesopotamia was partly related to trade between Anatolia and Mesopotamia in the second half of the third millennium BC. Furthermore, the development of the technology of metalworking depended on trade organised by the central administration. As copper and tin for casting bronze were transported from places where metal ore deposits were available if those materials were not present locally metalworking was thus a key component of long-distance trade networks, and we might conclude that interaction spilled over beyond the supply of raw materials to include the movement of finished goods, as well as technological and stylistic knowledge.

In terms of MBA metalworking it is worth mentioning in passing the presence of several moulds at Hirbemerdon Tepe, which is located along the Tigris in south-east Anatolia, in the MBA Phase IIIB period, 1950–1750 BC. These objects were mostly found in workshops (Massimino 2013: 88), and their presence indicates that the production of metal artefacts was quite widely dispersed by the early second millennium BC.

In addition, it is well known that in Anatolia, there are copper mines, which lie in a belt zone along the southeastern shore of the Black Sea, on the left bank of the Kızıl Irmak in central Anatolia and in the area of Ergani-Maden outside of central Anatolia (Roaf 1990: the map on 35). Copper is of course an essential substance to make bronze. In the Kültepe texts written in Old Assyrian, however, there is no mention of copper having been sent to Ashur, although there is mention of internal trade of copper within Anatolia (Larsen 1976: 91). In this respect, the suggestion is made by Larsen that copper may have been brought directly from a source outside of central Anatolia to Ashur, possibly from the famous mines of Ergani-Maden (1976: 91-2). But the date when the mineral resources in Ergani-Maden were exploited is unknown; and whether these mines were available in the "Assyrian Colony" period is also uncertain. Accordingly, we cannot but say that there is no firm evidence for supporting Larsen's suggestion. At the moment, this still remains a moot question (see Chapter 2.5).

1.2.2.2. Western Anatolia

Very similar metalworking techniques were developed during the Early Chalcolithic and the Bronze Age in western Anatolia (Efe 2002: 61). However, it appears that metal typology in eastern Anatolia had an effect on metal assemblages in western Anatolia. For instance, toggle pins and lead bottles were found at the western site of Küllüoba in the late Early Bronze Age II (early third millennium BC) (Efe 2007: 49 and fig. 2 on 49). At the same time, tin-bronze

artefacts first appeared in western Anatolia. This is usually explained as resulting from the expansion of trading routes from Cilicia to western Anatolia, and Efe (2007: 49) suggests that this development had an influence on wider processes of urbanisation in this area at the time. In the mid-third millennium BC urbanisation had progressed along with the development of technology, such as new ceramic wares and forms and metalworking (Efe 2007: 55). Metal artefacts such as silver bowls and several copper/bronze garment pins began to appear in Troy II/7d, Phase IId, c. 2500 BC (Bachhuber 2009: 5–6). In addition, diadems, earrings, bracelets, pins and pendants were found in Treasure A (also known as 'Priam's Treasure') from the Troy II period. Similar types of diadem were also found in early third millennium BC contexts at Alaca Höyük in north–central Anatolia and at Arslantepe VI B, in eastern Anatolia (Sagona and Zimansky 2009: 206–8). In other words, both regions, western and eastern Anatolia, developed similar metalworking traditions at the same time.

1.2.2.3. Northern and central Anatolia

Arsenical copper assemblages from İkiztepe, in northern Anatolia, included object types and arsenic contents similar to those seen in the late fourth millennium BC at Arslantepe in eastern Anatolia. However, metallurgy in central Anatolia had not developed as much as in eastern Anatolia at that time, and the range of types was more limited (Sagona and Zimansky 2009: 206). In addition, the smiths at İkiztepe specialised in the production of arsenical copper rather than tin-bronze

during the third millennium BC, which is less the case at sites such as Alaca Höyük and Horoztepe in northern Anatolia. It is possible that one of the reasons why İkiztepe produced few tin-bronze artefacts was a shortage of raw materials and the slow transfer of bronze technology to northern regions of Anatolia (Özbal *et al*. 2002: 47). The other evidence, Muhly (1999) indicates that local smiths made bronze products in İkiztepe: it seems that there existed a group of local smiths in the Black Sea region. In the Early Bronze Age III, c. 2300–2000 BC, the usage of casting methods such as the closed mould was significantly increasing. This technology was used for casting standards in Alaca Höyük as well as axes, daggers and spearheads at Horoztepe (Sagona and Zimansky 2009: 206). Bronze artefacts from the early second millennium BC are often excavated in settlements in central Anatolia, such as Kaman-Kalehöyük and Boğazköy. Of particular note is the unique situation at Kaman-Kalehöyük, where many bronze artefacts were found in destruction level IIIc. Unfortunately it is difficult to make direct comparisons as the context is not clear in many cases, especially in old excavation sites.

1.2.2.4. Southern Anatolia

In the Early Chalcolithic period, c. 5000 BC, copper beads, awls and pins were found in Hacılar in south-west Anatolia and Mersin/Yümük Tepe XXII-XXI levels in Cilicia. Chisels and axes were found in the Middle Chalcolithic period, c. 5000–3000 BC, in levels XVII-XVI at Mersin. These objects were produced using

open moulds. Most artefacts were of arsenical copper; however, some of them were made of a rough copper alloy including tin-bronze. Metalworking technology developed slowly over time (Sagona and Zimansky 2009: 206; Yener 2000). However, the problem in this region is that there is very limited evidence because of problems with access to data. It may be that, in future, systematic metalworking studies will be conducted in southern Anatolia.

1.3. The power of city-states and the status of metal in society

Researchers have shown the financial and social value of metal artefacts. Indeed, Yakar (2002: 22) notes that metal was used extensively for the production of weapons and also points out that metal jewellery and weapons were indicative of high social status in the communities of eastern Anatolia, where they were found in wealthy burials from the late fourth/early third millennia BC. Moorey (1982) notes that spearheads have been found in third millennium BC graves in Mesopotamia and were probably associated with the display of social rank. Spearheads also occur more often than daggers or axes in the late fourth and third millennia BC in eastern Anatolia. There is less evidence for metal tools (e.g. hoes, spades, picks, sickles and adzes), although this may reflect the predominance of funeral goods among the extant corpus of EBA metalwork. Moreover, Stech and Pigott (1986) point out that a growing elite probably used their political and economic power to control the trade in metals, and in particular tin. Thus, one possibility is that bronze artefacts found in burials as mortuary gifts were in some

way considered more valuable than everyday bronze tools because bronze mortuary gifts such as weapons were a symbol of wealth for the elite. Nevertheless, grave goods seem also to have included metal artefacts such as rings and bracelets that may have been worn in daily life and which are less clearly decorative.

The political geography of Anatolia in the third and early second millennia BC was characterised by competing city-states. The Kültepe archives demonstrate the importance of competition between these city-states and shed light on the internal dynamics of the region. In a world of politically independent city-states, conflict was to be expected (Sagona and Zimansky 2009: 234), and this might have had a damaging impact on trading operations (Barjamovic 2011: 31).

1.4. The structure of the dissertation

For comparative purposes, a database of bronze artefacts was built which is based on the excavation reports for each site. Additional sources were consulted in developing and building this database: Blackwell (2011), Deshayes (1960), Erkanal (1977), Gernez (2007) and Müller-Karpe (1994). The overall structure of the study takes the form of six chapters. This first, introductory chapter has offered a brief discussion of the development of metallurgy in various regions of Anatolia down to the end of the Early Bronze Age (EBA). The second chapter presents basic information on the key archaeological sites pertinent to the thesis

and provides an introduction to the political and economic world of central Anatolia in the early second millennium BC, as this can be reconstructed from the documentary evidence associated with the Old Assyrian trade colonies in the area. The third chapter is concerned with contextual analysis and documents, and evaluates the positioning both of metal artefacts and human remains in the level IIIc destruction at Kaman-Kalehöyük. As this represents a unique deposit for the period, it provides a valuable opportunity to gain an understanding of how metal artefacts were worn and used by the living. In a discipline in which so much archaeological metalwork comes from burial contexts this is a rare opportunity to assess the extent to which patterns reconstructed from grave evidence can be carried over to the living. The fourth chapter contains a discussion of the typology of the objects from Kaman Kalehöyük and compares them with material occurring at other early second millennium BC sites in central Anatolia. The fifth chapter seeks to explore ideas arising from the data presented in Chapters 2–4 and includes a comparison of metal objects from settlement and burial contexts, a typological comparison of MBA Anatolian metal types with those from a wider area of north Mesopotamia and the Levant (to establish to what extent it is possible to talk of a distinctive central Anatolian metal industry at this time) and a discussion of the extent to which metal artefacts can shed light on the operation of Assyrian colonies in the region. The final chapter provides a brief summary and critique of the work and considers the extent to which it has been possible to deal effectively with the three main areas outlined in the beginning of this chapter.

Chapter 2: General introduction to the political and economic world of the Assyrian colonies in the early second millennium BC in central Anatolia

2.0. Introduction

This chapter will introduce several sites referred to in this dissertation, in particular those dating to the Assyrian Colony period in central Anatolia. It will discuss in detail Assyrian merchants and trade, with a focus on the copper and tin trades. In addition, it will discuss the price and value of metal and trade commodities.

2.1. The principal sites in the early second millennium BC in central Anatolia

This section introduces the important sites in central Anatolia. The main Anatolia site chronologies utilised in this thesis are shown in Table 2.1.

Table 2.1. Comparative chart of local chronologies used at the main sites discussed in this dissertation: Alishar Höyük, Boğazkoy, Kaman-Kalehöyük and Kültepe. (Source: Boehmer 1972: Beilage 1; Omura 2004: Fig. 3 on 110; Orthmann 1980: 380; Osten 1937: fig. 513 on 459; Yakar 2011: Table 4.6.)

<table>
<tr><td rowspan="2">Date</td><td colspan="2">Kültepe</td><td>Kaman-Kalehöyük</td><td colspan="2">Boğazköy</td><td colspan="2">Alishar Höyük</td></tr>
<tr><td>Mound</td><td>Kārum</td><td>Mound</td><td>Mound</td><td>Kārum</td><td>Mound</td><td>Terrace</td></tr>
<tr><td rowspan="8">1750 B.C.

1930 B.C.</td><td>6</td><td>Ia</td><td rowspan="4"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="8"></td><td rowspan="8"></td></tr>
<tr><td rowspan="3">7</td><td rowspan="3">Ib</td></tr>
<tr><td rowspan="5">IIIc</td><td rowspan="3">IVd</td><td rowspan="3">4</td></tr>
<tr><td rowspan="3">10</td></tr>
<tr><td rowspan="2">8</td><td>Ic</td></tr>
<tr><td rowspan="2">II</td><td rowspan="3">Va</td></tr>
<tr><td rowspan="2">III</td><td rowspan="3">5</td><td rowspan="3">11</td></tr>
<tr><td>9</td><td>IV</td><td>IVa</td><td>Vb</td><td>5</td></tr>
</table>

2.1.1. Acem Höyük

Acem Höyük is located south of Lake Tuz Gölü and approximately 18km north-west of Aksaray. It consists of a mound 800m × 700m in size, at which twelve levels were uncovered. The lower level belongs to the Early Bronze Age and Levels 3 and 4 belong to the Middle Bronze Age. Two main palaces were excavated, Sarıkaya (dendrochronological analyses give a date of 1777/1774 BC) to the south-east of the mound and Hatipler to the north-west of the mound, suggesting that they were contemporary with the *Kārum* Kanesh level Ib (Michel 2011: 316). However, these buildings were destroyed by fire. There were no cuneiform tablets, but clay bullae and seal impressions were found in this site and contribute to the dating of levels here. Bronze artefacts were also found in the

palaces. N. Özgüç excavated this site in the 1960s and, consequently, A. Öztan of Ankara University has continued excavations here (Michel 2011: 316).

2.1.2. Alishar Höyük (ancient name: Amkuwa?)

Alishar Höyük is approximately 200km east of Ankara and about 85km south-east from Boğazköy (Joukowsky 1996: 169). The location is also approximately 73km north of Kültepe and surrounds KızıIrmak, as well as straddling with the trade route leading towards from Kültepe to Boğazköy (Özgüç 2003: 24). It is possible that this town might be Amkuwa, which was one of the *wabartum*. This has not been clearly demonstrated for the Assyrian Colony period yet, although it is clear that the town was called Amkuwa in the Hittite Empire period (Joukowsky 1996: 170). In 1927–1932 H. H. von der Osten of the Oriental Institute of the University of Chicago excavated the site. R. L. Gorney recommenced excavations there in 1993 (Michel 2011: 316).

The site consists of a mound around 28ha in area (Sagona and Zimansky 2009: 176) next to a terraced area (Joukowsky 1996: 170). The mound at Alishar Höyük is around 28ha in area (Sagona and Zimansky 2009: 176). The outline of the site was traced in 1927 and 1932, at which time two areas, a mound (M) and a terrace (T), were excavated. Fourteen occupation levels were found dating from the third millennium BC to the eighteenth century AD (Orlin 1970: 216). However, these reports misunderstand the contexts and confuse the system for naming the levels

(Joukowsky 1996: 170). For example, 10T is regarded as the level which belongs to the second millennium BC, whereas the level actually includes deposits running from the Assyrian Colony period to the Hittite Empire period. A cuneiform tablet that belongs to the Assyrian Colony period was found in 10T. In fact, it is still uncertain to what period each level should be assigned. Nevertheless, it is unusual, because it might have been the case that the level in 10T was divided into smaller levels (Orlin 1970: 216). J. Mellaart (1957) attempted to reconsider the levels of Alishar Höyük, but his ideas were impossible to verify because the original site excavation reports were unclear. At the least, he thought that 10T in the terraced area, which was destroyed in a fire, was the same as level Ib at *Kārum* Kanesh (Mellaart 1957: 63–4).

2.1.3. Boğazköy (Ancient name: Hattuš)

Boğazköy is located on the Anatolia plateau inside KızılIrmak, approximately 150km east of Ankara and approximately 124km north of Kültepe (Bittel 1983: 7; Özgüç 2003: 24). There was a *kārum* here in the Assyrian Colony period, after which the settlement was called Hattuš, and, subsequently, Hattuša, the capital city of the Hittites. K. Bittel excavated the site from 1952 to 1977, after which the excavation was taken over by P. Neve from 1978 to 1993 and J. Seeher from 1994 to 2005. The most recent research has been carried out by A. Schachner (Mielke 2011: 1032–34).

This site has a city wall surrounding a huge area that was divided into two: a lower town in the north and an upper town in the south. A high terrace to the south-east was occupied by Hittite kings; this area was called Büyükkale. The building phases on the site that are confirmed as belonging to the Assyrian Colony period are Büyükkale IVd, north-west of the slope in Büyükkale 8a, and lower city 4 (Bittel 1983: table on 242). The *kārum* was found from the level of the lower city (Bittel 1983: 60).

Some cuneiform tablets from the Assyrian Colony period were found in various locations across the site (Orlin 1970: 217–20). For example, three cuneiform tablets were found in Büyükkale, which evidence has led to the conclusion that the archives belong to Büyükkale IVd. In addition, four cuneiform tablets (and other objects) were found from the lower layer (Layer 4) of the lower city (Orlin 1970: 218) and are contemporary with *Kārum* Kanesh level Ib (Bittel 1983: 64). However, the cuneiform tablets found at *Kārum* Kanesh level II do not provide evidence to demonstrate the presence of a *kārum* in Boğazköy. Nevertheless, the excavation research shows that the *kārum* in Boğazköy did continue to exist until *Kārum* Kanesh level II (Orlin 1970: fig. 4 on 219).

2.1.4. Kaman-Kalehöyük

A detailed description of the remains from this site will be given in Chapter 3, where the evidence for the destruction level is presented.

2.1.5. Kültepe (ancient name: Kanesh/Nesha)

Kültepe is approximately 320km south of Ankara and approximately 21km north of Kayseri, outside the Kızılrmak. The location is over 1000km north-west of Ashur in north Mesopotamia (Özgüç 2003: 24). The site was excavated by B. Horozny in the 1920s; after that, work was continued by T. Özgüç from 1984 to 2005, and up to the present day the site has been excavated by F. Kulakoğlu (Kulakoğlu 2011: 1013).

Kültepe is a mound approximately 500m in diameter and 20m high that covers around 50ha, with a surrounding terrace area (Sagona and Zimansky 2009: 176 and 227). The mound has a palace area and an administrative building that were buried under a layer of burnt soil. The excavation of the mound revealed a total of eighteen contexts ranging from the Early Bronze Age I period to the Roman period on the virgin soil (Kulakoğlu 2011: 1014). In addition, the so-called 'Anitta's spearhead' was found in the sixth context from the top of the mound. A palace was also found in the seventh context from the top of the mound which, according to 'the letter of Anum-Hirbi of Mama' was an administrative building (Orlin 1970: 214). It was considered that this level was contemporary with *Kārum* Kanesh level II (Orlin 1970: 215; Orthmann 1980: 380).

In contrast, a lower city around the mound to the north, the excavated levels to the

east and south are contemporary with *Kārum* Kanesh levels IV, III, II, Ib and Ia. It was not determined who occupied *Kārum* Kanesh level Ic. In *Kārum* Kanesh levels II and Ib a large number of cuneiform tablets were found. To date a total of 23,500 cuneiform tablets has come from *Kārum* Kanesh levels II and Ib: 23,000 tablets from level II and 500 tablets from level Ib (Kulakoğlu 2011: 1028; Özgüç 2003: 28) (see Section 2.2.1). These tablets are evidence of occupation in these areas by Assyrian merchants (Kulakoğlu 2011: 1020). The buildings of both levels were destroyed in a fire. In particular, the burnt soil in *Kārum* Kanesh level Ib marks the end of the Assyrian Colony period (Orlin 1970: fig. 3 on 215). The new buildings of *Kārum* Kanesh level Ia were built on the remains of the buildings of *Kārum* Kanesh level Ib. It might be assumed that the activities represented by *Kārum* Kanesh level Ia took place immediately after Assyrian occupation and the beginning of the Old Hittite period (Orlin 1970: 210 and 214; cf. Burney 2004: 164).

2.1.6. Yassı Höyük

Yassı Höyük is located approximately 170km from Ankara and approximately 30km from Kaman-Kalehöyük, to the east. The site is approximately 500m × 625m and 13m in height – that is, of a similar size to Kültepe and Acem Höyük. Two phases are clearly known: the Late Bronze Age and, subsequently, the Assyrian Colony period. In the fourth excavation season in 2012, a bronze trident and a spearhead were found in Room 27 in Yassı Höyük level II, which appears to

have been part of the palace in the early second millennium BC (*Japanese Institute of Anatolian Archaeology: Yassı Höyük*, 2012). In addition, one bronze segmented pin was also found in Room 8, actually in the courtyard of the palace, on this site. These objects were similar types to those found at Kültepe in the Assyrian Colony period (see Chapter 4). According to Barjamovic (2011: Table 39 on 411) 'Malitta', which was the name of a *kārum* or a *wabartum*, was located between Kırşehir and Kaman (see Table 2.2), a suggestions which strengthens the possibility that 'Malitta' is to be equated with Yassı Höyük (*Japanese Institute of Anatolian Archaeology: Yassı Höyük*, 2012). M. Omura, from the Japanese Institute of Anatolian Archaeology, has excavated this site from 2009.

2.2. Cuneiform tablets

2.2.1. Cuneiform tablets in Kültepe

The publications in this area are those of Dercksen (1996 and 2004), Larsen (1976) and Veenhof (1985), and I have drawn on all of these in framing the discussion below that their research on the cuneiform tablets contributes to our understanding of life in the early second millennium BC. The archives were written in the Akkadian dialect (Barjamovic 2011: 55) and reflect the history and way of life of the Old Assyrian community in Anatolia (Veenhof and Eidem 2008: 41). Most of the texts concerned Assyrian merchants. However, some of them also described the activities of local Anatolian merchants who spoke the Assyrian language. From the late nineteenth to the early twentieth century some

4,000 tablets were found in Kültepe. Unfortunately, the value of these tablets as evidence is questionable, as they were found by farmers near the site. A further 17,549 tablets were found between 1948 and 2000 (Barjamovic 2011: 55), with only 50 tablets found in the official building on the citadel mound in Kültepe (Barjamovic 2011: 56; Veenhof and Eidem 2008: 41). Thus, most were found in *Kārum* Kanesh levels II and Ib. Moreover, about 18,000 tablets were still unpublished in 2011. These are stored in the Museum of Anatolian Civilisations. As noted above, 50 texts belonging to the periods of *Kārum* Kanesh levels II and Ib were found on the citadel mound, in levels seven and eight, perhaps suggesting, as Veenhof and Eidem (2008: 41–42) argue, that some Assyrians lived here. It would be difficult to indicate Assyrian merchants lived here even finding the documents in the mound because the citadel mound was a palace area. In addition, copies of the cuneiform tablets were transferred to Ashur by merchants, and the original tablets were kept in merchant houses at Kültepe (Dercksen 1996: 91).

Various types of archives have been found, including business letters, legal documents, a variety of memoranda, notes, lists, contracts and judicial records dealing with cases of family law, adoption, marriage, divorce and inheritance. In addition, transport records and debt notes were found. The latter generally recorded gifts sent to a person, such as silver and gold sent to a woman as a present (Veenhof and Eidem 2008: 50–4). In this way evidence of metal trading has been found in the archival texts, a trade in which Assyrian merchants were

actively involved (Larsen 1976: 91). The most important goods in Anatolian trade were of copper, althoughthe archives mention many metals, including gold, iron, tin and bronze (Dercksen 2005: 18). Quantities of metal, including of tin and copper, were increasingly described in the archives (Dercksen 2005: 18), while tin was a main commodity in the trade between Anatolia and Ashur, according to the Kültepe archives (Leemans 1960 and 1968; Yener 2000). Hence, it is clear that metalworking played an important role in trade, as evidenced in the Kültepe archives (Dercksen 2004: 18).

2.2.2. Cuneiform tablets from other sites in central Anatolia

In addition, similar and broadly contemporary tablets were found at other sites, such as Boğazköy and Alishar Höyük. To 2011, the total number of tablets found from both sites is 150 texts. A total of 135 texts from Boğazköy and Alishar Höyük are contemporary with *Kārum* Kanesh level Ib; the periods for the others are still unknown. In addition, a few texts were found in Kayalıpınar, near Sivas, and two text fragments were found in Kaman-Kalehöyük (Barjamovic 2011: 56), one of which was found in the stone foundation of Room 41 in Sector IV of the north trench during the 1990 excavation season and is contemporary with *Kārum* Kanesh level Ib (Omura 1994: 119). The text was written in the Old Assyrian dialect, in the cuneiform script, but is difficult to decipher. The otherKaman-Kalehöyük text was unearthed in Room 317, in Sector 25 of the north trench during the 2001 excavation season (Omura 2002: 5). An invoice

dealing with cereals, it was also written in the Old Assyrian dialect. Interestingly, the name of the person mentioned in this text was of Hittite origin. The context of discovery was the Hittite Empire period IIIa level. However, this text itself belongs to the Assyrian Colony period and is isolated from the Hittite Empire period (Yoshida 2002: 133–7). Consequently, there are still a number of Assyrian settlements yet to be excavated in many places in Anatolia (Barjamovic 2011: 58).

Furthermore, a few Assyrian texts were also uncovered in places in Mesopotamia such as Sippar. The evidence shows that trade goods were dealt with directly from Sippar to sites to the south and the east such as Ešnunna and Susa. Ashur was also an important transit point for foreign merchants and a small number of texts were found there (Barjamovic 2011: 9–10). Thus, traces of Assyrian merchants can be seen all across the region, in northern Mesopotamia as well as in Anatolia. However, it is not completely certain whether or not Assyrian merchants had engaged in trade with southern Mesopotamia.

2.3. Landscape and ancient trade routes in the early second millennium BC

2.3.1. Landscape and climate in Anatolia

Today, the climate varies across the regions of Anatolia. The Mediterranean experiences cool, rainy winters and hot, dry summers. Internal regions, such as central Anatolia, have cold winters and dry, hot summers. However, the environment was different in the early second millennium BC. There were

widespread conifer and broadleaf forests, scrubland and many lakes in Anatolia: Lake Tuz Gölü, for example, is located to the east of the Anatolian plateau. The sources of the Tigris and Euphrates, on the banks of which ancient civilisations flourished, are located in Turkey. The most famous river is the Kızılırmak, which is about 1,355km long and surrounds central Anatolia (Barjamovic 2011: 77–8) and dividing western and eastern areas of Anatolia. Trade and the movements of people, in the mountainous areas in particular varied depending upon the season; for example, in summer the caravans had to move at night because of the intense heat (Barjamovic 2011: 82–5).

2.3.2. Ancient trade routes across Anatolia

The routes between Anatolia and Mesopotamia lay to the east of the Taurus Mountains (see Map 5 in Appendix). Several routes existed on the Anatolian plateau to connect the east and the west. The most famous was the connection between the Anatolian plateau and northern Syria running along the coast of Cilicia (Barjamovic 2011: 80). The start of this route was the 'Cilician Gates' and from Kayseri the route to the north divided into two: one branch led from Kırşehir or Kaman to Polatlı and the other from Boğazlıyan to Sorgun. Another important route was from Kayseri to Sivas, which was along the Kızlırmak; the water level was reduced in the summer, which would have made it easier for the caravans to cross the river (Barjamovic 2011: 84). Even though the 'Cilician Gates' was an important crossroad, it should be noted that Cilicia itself was outside the Assyrian

trade route. However, the ruler of the 'Cicilian Gates' area could have been one of the city-states, such as Ebla, Emar or Aleppo, or even Cilicia itself (Barjamovic 2011: 8). In Cilicia there were a few large settlements during the Middle Bronze Age, and a number of large settlements existed in south-east Anatolia during the early second millennium BC (Barjamovic 2011: 80–1). However, Barjamovic (2011: 81) also illustrates a limited number of settlement remains in south-east Anatolia.

2.4. Assyrian trade communities and transportation

2.4.1. Organisation of the Assyrian trade communities

The areas in whicih Assyrian merchants resided were called *kārum* and *wabartum*. *Kārum* means 'a harbour' in Akkadian, which is from a Sumerian loan word, KAR. Assyrians used the word to demarcate their colonial areas in foreign countries in which they traded (Orlin 1970: 25). The *wabartum*, which were smaller than the *kārum* areas, played the role of a station in trade (Orlin 1970: n. 12 on 26–7). Assyrians and local Anatolians both lived in the latter. The colony and the station thus constituted between them the colonial administrative network (Barjamovic 2011: 56). The *kārums* and *wabartums* in which the Assyrians lived were dotted around cities and towns from northern Syria to central Anatolia. In particular, the *Kārum* Kanesh was a hub merchant city in Anatolia.

Kārums and *wabartums* also played important economic roles aside from their

role in trade. Asystem of taxation pertained in the *wabartums* that involved half of the inhabitants' tax being paid as tax to the colony, while other taxes were paid to individual tax collectors (Dercksen 2004: 111–12). In the *Kārum* Kanesh a special tax (*šaddu'atum*) was collected. This took the form of particular 'low' and 'high' taxes. *Kārums* paid the 'high' tax, and *wabartums* paid the 'low' tax for luxury items such as iron. However, not all merchants had to pay the tax, although the leader of a group of merchants was required to pay (Dercksen 2004: 116–18 and 125). In addition, tax was collected elsewhere. For instance, traders paid a toll to the bridge keepers (*ša titurrim*), or at fords or ferries (*nēbartum*). Large rivers were rare in central Anatolia and the bridge was generally built at the narrowest section, as at, for example, the village of Karaözü, on the Kızılırmak, which was located approximately 60km north-east of Kültepe (Barjamovic 2011: 23), and the rock of Kapalıkaya near Köprüköy on the Kızılırmak, which was located at the ancient crossing in Wahšušana (Matsumura 2010; Barjamovic 2011: 24). Assyrian merchants had to pay the toll of a gift of a drink, such as wine, to the bridge guard.

Transportation of the time was costly and included many expenses, such as tolls, poll taxes, accommodation fees, food expenses and labour costs of various sorts. The overall cost was described in the texts in terms of how much tin was paid in tariffs throughout the whole journey. However, none of the documents give details of the journeys from Ashur to Kanesh (Kawasaki 1998: 4–5). In general,

Assyrian merchants had to pay the toll for each city. Caravans paid using tin when travelling from Ashur to Anatolia and using silver when travelling in the opposite direction. For example, the standard value of tin was two minas (c. 1kg) per textile. In addition, the value of a donkey was between two (c. 1kg), one and two-thirds (c. 1.3kg) and one and one-third (c. 667g) minas (Dercksen 2004: 151–2). Assyrian merchants also paid taxes to the rulers of Anatolian countries. One of the roles of the city hall in Anatolia was to mediate between Anatolian rulers and Assyrian merchants when the latter paid their taxes (Orlin 1970: 59–62). The rulers in Anatolia allowed Assyrian merchants to live in Anatolia and guaranteed the safety of their lives and their caravans in return for tax payments (Larsen 1976: 245). Thus, tolls and taxes were an important source of money for Anatolian rulers and in return, they ensured traders and merchants a safe journey. Assyrian merchants had to pay the toll of a gift of a drink, such as wine, to the bridge guard. Other documents have also confirmed that Assyrian merchants gave the bridge guards drink and other gifts (Barjamovic 2011: 26). Thus, Assyrian merchants had to pay the toll and other gifts. However, it is unclear how local Anatolian merchants behaved in similar situations.

2.4.2. Location of the Assyrian trade communities

It should be noted that many of the ancient settlements mentioned in the texts from *Kārum* Kanesh levels II and Ib still cannot be matched to modern places. However, according to Larsen (1976: 236–40), the texts from *Kārum* Kanesh

level II provided at least twenty names of *kārums* and *wabartums*, and seven names came from *Kārum* Kanesh level Ib. In developing his research, Barjamovic (2011: 87ff.) adds more detail to the research data, as shown on Fig. 2.1. Fig. 2.1 shows rivers (blue lines), such as the Euphrates, over which are bridges, and the distances between each *kārum* and *wabartum*. Although their locations are generally unknown, because it is rare that the place-name is sufficient information to allow a definite identification of the site, we know, approximately, the relative positional relationship between each *kārum* and *wabartum*. Indeed, twenty Assyrian colony names have already been identified (Veenhof 1972: 456). It is certain, for example, that Hattuš is the same place as Boğazköy, the capital city of the Hittites, and that Kanesh is the same place as Kültepe. In addition, Table 2.2 describes the suggested *kārum* and *wabartum* locations in the second millennium BC (Barjamovic 2011: table 39 on 411). Table 2.2 could be helpful in determining the locations of *kārums* and *wabartums* and thus useful in enabling archaeological research of the sites of the second millennium BC. It is possible, indeed, to estimate the modern location of some of the names mentioned in the texts; for example, Amkuwa is Alishar Höyük in central Anatolia. In addition, it has been estimated that most city and town names in the hinterland of Kültepe have been discovered. In contrast, the texts show a place called Malitta between Kırşehir and Kaman, yet the place is still unknown (Barjamovic 2011: table 39 on 411). Nevertheless, it is considered that Malitta was an important place for trade because it was located close to Kaman-Kalehöyük. Those Assyrian merchants

based in the cities and towns that had *kārums* and *wabartums* had improved the trade network in the early second millennium BC; however, it is unclear whether others also contributed. Using *kārums* and *wabartums*, Assyrian merchants could conduct business especially focusing on tin, textiles and silver. The relationship between the *Kārum* Kanesh and others influenced a great deal of trade. However, Dercksen (2004: 116) points out that the power of the *Kārum* Kanesh did not reach the other *kārums* and *wabartums*, owing to political turmoil; the *Kārum* Kanesh thus had no political power, even if it played a major role in commerce because the palace, which was the centre of administration and government, controlled business there (Veenhof 1972: 456).

One of the problems faced by Assyrian merchants was the large taxation burden on their trade. As a result, many were involved in illegal trade. The evidence from the texts describes smuggling activity generally conducted between Timelkiya and Ḫaḫḫum. Two routes existed from Ḫaḫḫum to Kanesh: the north road, which was from Ḫaḫḫum to Timelkiya, and the south road, from Ḫaḫḫum to Mamma.

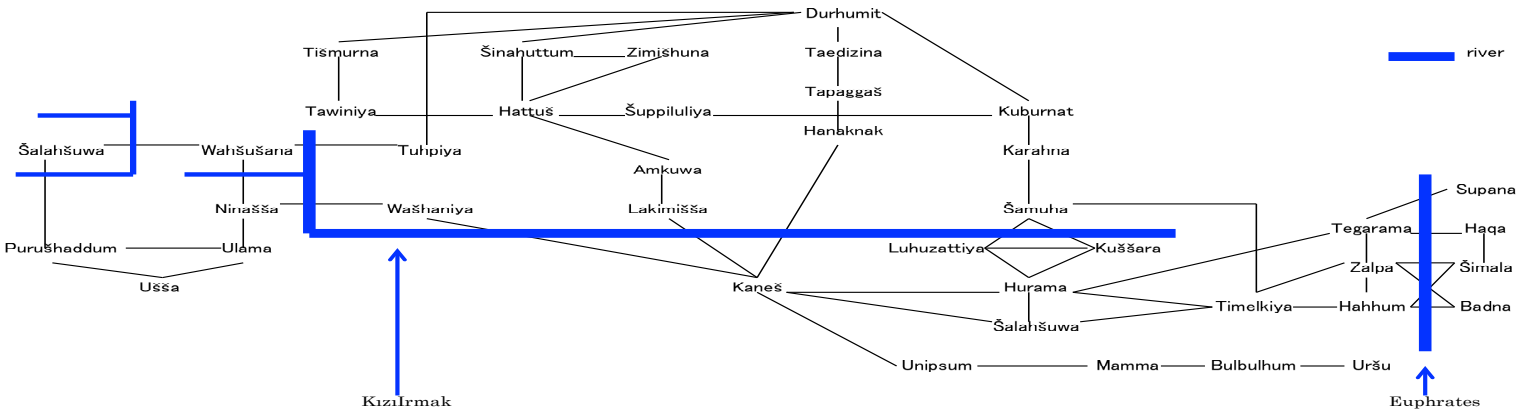


Fig. 2.1. The trade distance of *kārums* and *wabartums* according to the texts.

(Source: modified of Barjamovic 2011: fig. 49 on 381)

Table 2.2. The suggested locations of *kārums* and *wabartums* in the second millennium BC.

(Source: modified of Barjamovic 2011: table 39 on 411)

Colony	
Toponym	**Location**
Durhumit	Plain of Merzifon (Sulu Ova)
Hahhum	Samsat or its vicinity
Hattuş	Boğazköy
Hurama	Plain of Elbistan, probably Karahöyük
Kaneš	Kültepe at Kayseri
Ninašša	Harmandalı or Varavan
Purušhaddum	Bolvadin
Šalahšuwa	In the Zamanti Plain, perhaps Limpara Höyük
Tawiniya	West of Boğazköy
Tegarama	Plain of Malatya
Timelkiya	Near Gölbaşı
Uršu	Around Gaziantep
Wahšušana	Köprüköy / Büklükkale
Station	
Toponym	**Location**
Amkuwa	Alişar Höyük
Karahna	Sulusaray
Kuššara	North of the Plain of Elbistan
Mamma	Kahramanmaraş
Šinahuttum	Northeast of Boğazköy
Tišmurna	Around Çorum
Ulama	Acemhöyük
Ušša	Plain of Konya, probably Karahöyük
Zimišhuna	Around Gediksaray and Ayvalıpınar
Station→Colony	
Toponym	**Location**
Hanaknak	Plain of Kadışehri
Kuburnat	Plain of Turhal and Zile (Kazova) or Bolus (Aktepe)
Šalatuwar	Near Sivrihisar, Kepen Höyük
Šamuha	Near Sivas, probably at Kayalıpınar
Šuppiluliya	Between Boğazköy and Sulusaray, perhaps Yassıhöyük
Tuhpiya	South of Delice, perhaps Büyükkale / Küçükkale
Wašhaniya	Around Kırşehir
Zalpa	Upriver from Samsat
Station or Colony	
Toponym	**Location**
Kapitra	In the region between Boğazköy and Alişar Höyük
Kunanamit	North of the Tavşan Dağ
Lakimišša	Boğazlıyan / Yoğunhisar
Luhuzattiya	North of the Plain of Elbistan
Malitta	Between Kırşehir and Kaman
Marithum	East of Merzifon
Tapaggaš	Maşat Höyük (Zile)
Unipsum	Plain of Göksun
Zalpuwa	Ikıztepe at Bafra

2.4.3. Organisation of caravans and donkeys

The distance from Ashur to Kültepe is approximately 1,000km for a caravan (Klengel 1979: 143; Barjamovic 2011: 15). The caravans from Ashur to Kanesh, via the upstream region of the Tigris and Euphrates, took about five to six weeks to cross (Barjamovic 2011: 15 and 112–13). Caravans were usually composed of multiple groups, each having two or three donkeys which were, once they had been used for transport, sold in Anatolia (Veenhof 1972: 2; Larsen 1976: 102). Some of these groups were travelling to the final destination through Kanesh (Kawasaki 1998: 2–3; Barjamovic 2011: 15). Donkeys could usually travel for eight hours a day (Barjamovic 2011: 34), and could carry approximately 65kg. Additionally, each donkey would carry trade goods up to 70–75kg (Barjamovic 2011: 16). Each donkey ate approximately 2–3kg of fodder each day and required less drinking water than animals such as horses. Thus hundreds of men and donkeys passed through Northern Syria per year and, consequently, the local economy was developed to serve the caravans (Barjamovic 2011: table 4 on 35, and 37). Inns and caravanserais functioned as banks and stations for hiring guides and agents. As noted, Assyrian merchants had to pay fees in metals, such as silver, copper and tin. The accommodation fee varied according to place and the size of the caravans. However, trade was halted temporarily whenever war broke out (Barjamovic 2011: 30–36). In any case, it seems clear that the Assyrian merchants needed substantial expenses to operate the caravans. Large or heavy loads, such as straw, wood, stones and copper, were transported by wagons (*ereqqum*) in the

early second millennium BC. These had four massive, spoked wheels and could carry between 300 and 600kg. For example, copper was transported on such wagons between Wahšušana and Purušhaddum. They were not used for long-distance trade, however, mostly being used instead for local transport within Anatolia (Barjamovic 2011: 19–23).

Trade roads and routes were dangerous, and caravans especially were targeted for looting. In contrast, the main road was safe for travellers and only one text describes people dying on the trade road. As mentioned above, Assyrian merchants paid a fee per donkey to the local rulers as part of the toll when they went through their areas, in return for which the travelling merchants were given guarantees of safe passage, compensation for damages and the extradition of Assyrian criminals (Barjamovic 2011: 26).

2.5. Copper

2.5.1. Copper resources

Many mineral resources were found in Anatolia and it is reasonable to assume that most of copper in use came from Anatolian sources (Dercksen 1996: 27–8; Wilkinson 2014: Fig. 5.1. on 157). However, evidence for the exportation of a large amount of copper from Anatolia to Ashur was not found in the Kültepe archives (Larsen 1976: 91). Nevertheless, some bronze household artefacts were occasionally exported from Anatolia to Ashur (Larsen 1976: 86–7). Copper is the

main ingredient of bronze and should have been required in Ashur, as northern Mesopotamia was not rich in mineral resources. However, Assyrian merchants obtained silver rather than copper via the colony system (Larsen 1976: 86–7). Larsen (1976: 91–2) thus suggests that copper was brought directly from workshops in Anatolia to Ashur, probably through different Assyrian merchant networks, ones for which documentation has not yet been unearthed. Indeed, given the presence of famous copper deposits around Ergani in the upper part of the Euphrates Valley it is likely that people in Ashur imported copper directly from Anatolian sources rather than via the colony system (Larsen 1976: 92). At any rate, one of the unsolved issues of this trade remains the exportation of copper from Anatolia to other areas (cf. Wilkinson 2014: 158-62).

2.5.2. Copper trade

Copper, which was traded in low and high quality versions, was transported in the form of ingots. During the second millennium smelting products, including copper, came to contain materials such as the iron was higher in quality than the copper (Dercksen 1996: 29). Evidence in the Kültepe texts shows that the famous location for copper trade was Durhumit, where poor-quality copper was sometimes exchanged for refined copper. Most copper was transported from Durhumit to Purušhaddum and sold to obtain silver, which had value as money (Barjamovic 2011: 14). Assyrian merchants became involved in the copper trade inside Anatolia, as Anatolia had rich copper deposits (Dercksen 1996: 27–8).

Copper was imported directly from Ergani, south-east of Turkey, which was in either Eastern Anatolia. The Kültepe texts note that twenty minas of silver were paid to the city hall in Ashur for obtaining copper (Dercksen 2004: 23), and that the Assyrian merchants sold textiles to obtain copper (Barjamovic 2011: 118–19). The palace, which became involved in the copper and tin trades because bronze, which was made of copper and tin, was an essential material in the production of weapons, transferred its supply to the local *kārum* office. Infrequently, the *kārum* office made payments in silver or gold, instead of copper. So, in fact, Assyrian merchants could not easily obtain copper because, while the *kārum* office mediated between the Assyrian merchants and the palace, the economy in Kültepe was ultimately controlled by the palace (Dercksen 1996: 154). Copper thus tended not to be transported from Kültepe to Ashur. Instead, the copper that was used in Ashur was brought from Oman, Iran and also from Ergani in Turkey (Dercksen 1996: 180–82). The *kārums* and *wabarutums* were not part of these other trade systems. Additionally, according to Dercksen (1996), the copper business had mainly been conducted by local Anatolian traders. As a result, the copper trade was not part of the long-distance trade from Kültepe to Ashur.

2.6. Tin

2.6.1. Tin resources

One of the main trade goods was tin, which was one of the most important materials in the early second millennium BC, not only in Mesopotamia but also in

Anatolia and other Near Eastern areas, although tin deposits were not found in Mesopotamia or these other areas. Even Anatolia, which was rich in mineral resources, had very little tin. This lack of local sources accounts for the importance of tin as a trade good Tin sources existed in Tadzhikistan and Uzbekistan during the early second millennium BC (Weisgerber and Cierny 2002: 179–86), and, although analysis suggests that the mines in Uzbekistan were not used in the early second millennium BC, this tin was taken from those places to Ashur via Babylonia (Barjamovic 2011: 9; Dercksen 2004: 26). It is probable, in fact, that the tin resources were in Badakhshan and Afghanistan, as they are today, and that those ores were transported to Ashur via Susa, in south-west Iran (Stech and Pigott 1986: 44; Dercksen 2004: 17), a place which had a generally important role in trade from the east towards Afghanistan, to Ashur (Dercksen 2004: 30), while the Kültepe texts note that tin came from the east of Ashur, although they give no more details. Veenhof (1995: 863) also points out that tin was transported from Afghanistan to Ashur, although he suggests that caravans carrying tin from Afghanistan to Ashur were not organised by Assyrian merchants. Hence, Assyrian merchants seem not to have been importers of tin even though the market in Ashur sold tin to foreign traders (Barjamovic 2011: 9). Yet, Walker (1980: 15–17) suggests that textiles transported from south Mesopotamia to Ashur were sold by Assyrian merchants. This indicates that these traders were in the same area as the tin trade, although it is theorised that they were not involved with it. Thus, based on evidence from the texts, there are two possible solutions for this

problem: the first is that Assyrian merchants participated only in the transportation of textiles, and the other is that Assyrian merchant networks operated on the southern routes. As no concrete proof exists for either of the solutions offered, we must await the results of further research.

Over twenty years ago tin deposits were found in Bolkardağ in the Taurus Mountains in the north-western part of Cilicia (Yener and Özbal 1987: 223–5), although the scale and archaeological significance of these deposits remains unclear. Tin deposits were also unearthed in Kestel; at the same time, in Göltepe, near Kestel, workshops to process the tin were found (Yener and Vandiver 1993: 207ff). The archaeological evidence from Kestel suggests that the mining of tin began in the third millennium BC (Yener and Vandiver 1993: 214; Willies 1993: 263). However, Muhly (1993: 239ff.) disagreed, and suggested instead that the mining of tin began during the second millennium BC. Postgate (1992: 212) sets out the issue, which is that, even if the mining of tin had begun here during the second millennium BC in Anatolia, the tin known to the Assyrians had been sourced and produced before this. Whatever the exact situation regarding tin sources in Anatolia (Wilkinson 2014: 162-5), it is certain that Assyrian merchants were involved in bringing tin from Ashur to Anatolia, and that the deposits from which the tin came lay further to the east.

2.6.2. Tin content

Another point to be taken into consideration is the written record relating to metal quality. For example, the cuneiform tablets in Ebla recorded information on the tin content of specialised tin-bronze in the second half of the third millennium BC. Most objects described contained tin in the range 8–15% (Yakar 2002: 22). In addition, weapons such as daggers and battle axes and the plates included tin content of over 15% (Archi 1993: 618). This use of a bronze with a high tin content for objects such as weapons seems to imply that increasing the tin content made a stronger alloy. Furthermore, a compounding ratio of tin and copper of 1:8 is described in the early second millennium BC in Mari archives (Reiter 1997: 308–9). In addition, other tablets – for instance, documents from King Erishum – found in Ashur also described bronze artefacts (Grayson 1987: 20).

The excavation report from İkiztepe included metal analyses which indicate the presence of tin-bronzes with a tin content of 32.9% (Muhly 1999). However, these metal analyses were undertaken in the 1980s by Bilgi, Kunç, Öabal *et al*. and the reliability of these older data must now be reconsidered (Özbal *et al*. 2002: 40). However, this work is now being put in hand by new researchers. According to Chernykh *et al.* (2002: 98–9 and fig. 17) the rate of pure bronze, copper and tin artefacts increased in Anatolia in the Middle Bronze Age. In future, studies will include the re-analysis of bronze artefacts.

2.7. Evidence of metallurgy in the early second millennium BC

Metalworking developed from the third millennium into the second millennium in Anatolia, and the Kültepe archives briefly described metallurgy in this later period in Anatolia. The texts suggest that the coppersmiths were mostly Anatolian, although a few Assyrian names were also recorded (Dercksen 1996: 71). This means that the people who were working actively with metal were mostly Anatolian. These local smiths undertook three main activities: refining, repairing and exchanging metals. Assyrian merchants sold copper to smiths. Metal products, which were made by smiths, and the metal products exchanged with merchants were in turn sold for more metal by merchants. The palace at Kültepe may have controlled aspects of metalworking, as a document found there recorded two smiths in Kanesh. In other words, these smiths were managed by the palace (Dercksen 1996: 72; 2005: 30).

The most famous metal workshops in terms of the archaeology present are those from Kültepe. Three workshops from *Kārum* Kanesh level II and at least six workshops from *Kārum* Kanesh level Ib were excavated in the residential area of the lower city, the *kārum* (Özgüç 1986: 41–4 and 48–50). The buildings, which were destroyed by the fire that marked the end of *Kārum* Kanesh level Ib, had no fixed architecture, suggesting that the smiths worked and lived in the same house (Dercksen 1996: 71). At that time a range of material was left in place, including a few metal artefacts and moulds (Özgüç 1986: 41–4 and 48–50). Moulds were

excavated in several private houses in *Kārum* Kanesh, and Dercksen (1996: 72) indicates that customers may have brought their own, favourite moulds to the workshops for the production of axes, daggers and chisels. However, there was a lack of evidence for metalsmiths in the Kültepe archives, and Massimino (2013: 55–6) points out that the metalsmiths left no record of metalworking. It is possible that the smiths could not keep records themselves, because they were illiterate. Fortunately, the merchants described smiths and metallurgy, although such descriptions were present in relatively few documents (Massimino 2013: 56) because the archives focused on commercial activities.

During the recent Ilısu Dam Rescue Project along the Upper Tigris River Valley, several Middle Bronze Age sites were found (Laneri and Schwartz 2011: 348). Among these was Hirbemerdon Tepe, a small site of the early second millennium BC, c. 1975–1782 BC (mostly contemporary with the *Kārum* Kanesh levels II and Ib) (Laneri *et al.* 2006; Massimino 2013: 74–5), which revealed metal workshops and moulds. The site is located on the west bank of the Tigris in south-eastern Turkey, approximately 40km south-east of Bismil in the Diyabakır province (Laneri *et al.* 2009; Massimino 2013: 74). There is a mound and an outer town. The mound is approximately one hectare in area and has an architectural complexity and rooms for private residence. The outer town covers approximately two hectares and lies to the west of the mound on which the workshops were found. Hirbemerdon Tepe was the small site of the early second millennium BC,

ca. 1975-1782 BC (Laneri *et al.* 2006; Massimino 2013: 74-5). The period of occupation is mostly contemporary with the *Kārum* Kanesh levels II and Ib. Nine moulds were excavated at this site. The types of metal objects made there were typically tools, such as awls, sickles and flat axes (Massimino 2013: 88 and 122). In addition, tin was obtained through trade and copper was procured from the Ergani Maden mine located approximately 150km north-west of the site, which was a largest copper source in Turkey (Massimino 2013: 122). Metal analysis suggests that the artefacts found at the site were composed of pure copper and low-arsenic copper, which means that the smiths worked with fairly basic techniques (Massimino 2013: 122). Massimino (2013: 122) points out that the metal technology in use had probably been adopted from other places, although she also suggests that Assyrian merchants had not imported new metal technology from Ashur. However, the Assyrian merchants had introduced a slightly developed metal technology to Anatolia, and the local Anatolian smiths had incorporated this technology (Massimino 2013: 126). Unfortunately, the details of metal technique are not explained. This region had confirmed metalworking from c. 8500 BC (see Section 1.2.2), meaning that the Anatolian metal technology of this period had been inherited from more ancient times. The addition of the metal technology of Assyria to it is evidenced by the recording of the names of Assyrian smiths in the texts (see Section 2.8). However, that technology was not likely to have been superior to Anatolian metal technology.

2.8. The life of Assyrian merchants in Anatolia

Assyrian merchants built a huge international trade network from Ashur to Anatolia, and Kültepe was one of the main transportation points in Anatolia. The merchants were based in Kültepe and in several other cities on the trade route. Having migrated into these trade-based cities, especially Kültepe, they married the local women, as evidenced by the Kültepe texts. They then traded tin and wool textiles and took back silver and gold for money through the trade network (Orlin 1970: 175; Özgüç 2003: 65; Barjamovic 2011: 9). In general, silver was used for money, although tin was also used for this purpose, as shown by evidence gleaned from many texts from Kültepe (Barjamovic 2011: 97). In addition, Assyrian merchants in Anatolia maintained their customs, such as language, terminology, religion and law. However, they adopted Anatolian styles of pottery and styles of building, for example (Orlin 1970: 28). Moreover, a wall did not enclose the *Kārum* Kanesh. The word *kārum* refers to the area in which Assyrian merchants resided and was the name of their administrative office, where functions such as the exercise of jurisdiction, the collection of tax and the management of other colonies and stations were carried out (Klengel 1979: 141–2). Assyrian merchants ran their businesses with the assistance of family members. The normal pattern was that the head of the family lived in Ashur and raised funds to obtain trade goods while sending a member of his family to Kültepe to trade. The caravan leader was usually a junior member of the family, such as a son or a brother (Barjamovic 2011: 15). Assyrian merchants did enter into both marriage and

business relationships with Anatolians (Veenhof and Eidem 2008: 56), and thus trade was conducted through small, family-operated businesses (Larsen 1976: 95–102). However, Anatolian traders were described in Assyrian texts, which is unusual.

In Ashur, the role of the city hall (Dercksen 2004: 33) was to manage the markets in that city, both the local markets and the export trade to Anatolia; it thus played an important role in the economy of the city-states and of Anatolia. It had a monopoly on the trade in luxury items, such as metal and high-quality textiles, which were then exported to Anatolia (Dercksen 2004: 37–9). The word 'city' seen in the texts refers not to the assemblage of cities in the trade network but to the officers in the city hall.

2.9. Ancient weights and measures

Weights and measurements had an important role in the trade of the early second millennium BC. In fact, 75-stone weights were unearthed in Kültepe (Özgüç 1986: 79). According to Monroe (2007: 175), a talent was about 30kg – the amount one person could carry. For example, one caravan might be made up of approximately 34 donkeys, carrying between them 684 textile pieces, 20 talents (c. 600kg) of tin and other miscellaneous items, such as nails, pins, precious stones, oil, spices and incense (Barjamovic 2011: 12–3). A talent was 60 minas and a mina approximately 500g (Dercksen 1996: 251). Sixty shekels made up a mina

and a shekel weighed around 8.3g in the Old Babylonian period (Dercksen 1996: 251), as is shown in the Mari archives; this result is reflected in the units from the Old Assyrian period. Kool (2012: 43) gives more detailed information: the average of one shekel was 8.3g, and the old standard was 8.4g. Underweight of one shekel was 8.1g, and overweight of one shekel was 8.48g, according to old Assyrian weights (Zaccagnini 2001: 1203–9). One mina weighed 497.7g in the early second millennium BC (cf. Kool 2012: 43). However, the definition of measures varied from period to period. For example, a mina was fifty shekels in the Late Bronze Age and forty shekels in the Hittite Empire period (Monroe 2007: 175). Under Zimri-Lim, who was the king of Mari c. 1750 BC, weights and measures had been tightly controlled in the office of the palace and were adjusted on at least three different occasions (Kool 2012: 34). According to Kool (2012: 67), approximately 43% of weighing stones found in Kültepe were identified as belonging to the old Assyrian weights. However, he points out that stone weights were traded between each city by merchants (Kool 2012: 56) and, thus, from the *Kārum* Kanesh, non-Assyrian and Anatolian weights were also found. For the Hittites, one shekel was 11.4g as standard (Ascalone and Peyronel 2006: 50–6), and overweight of one shekel was 11.75g (Zaccagnini 2001: 1203–9). In contrast, in Ebla the local standard of one shekel was 6.66g, and overweight of one shekel was 6.8g. And for north Syria and Upper Mesopotamia one shekel was 7.8g, which was used for the official scale. There was a special rate to northern Syria in Ebla (Ascalone and Peyronel 2006: 50–6). Each rate was used for local and

international scales. Hence, weights and measures fluctuated between places and people in the early second millennium BC. However, this is not the same concept as 'value', because the needs of each region decided the price. Section 2.10.3 will consider the ancient prices on the basis of ancient weights and measures in the early second millennium BC.

2.10. Values of trade commodities

2.10.1. Main trade commodities

The question of where tin came from has been discussed above (see Section 2.6.1). Other important trade goods, such as textiles, are mentioned in the Kültepe texts (Veenhof 1972: 145ff). For instance, Assyrian merchants sold textiles to obtain copper (Dercksen 1996: 104). Exported textiles were made in Ashur and Babylonia and exported to Anatolia, in larger amounts from Assyria than from Babylonia (Larsen 1976: 89). In Ashur, women wove imported wool into textiles that were then sent to Anatolia. Babylonian textiles were exported through Ashur to Anatolia, and were called the textiles of Akkad in the archives (Veenhof 1972: 98ff). Barjamovic (2011: 12) points out that textiles were sometimes more important than tin in trade, because high-quality textiles were much in demand in Anatolia.

Donkeys carried textiles sealed in bags, rope bound and wrapped textiles, sealed tin (*annak kunukkim*), and unsealed tin (*annak qatim*). Unsealed tin refers to tin in

hand or tin that could be used at any time (Veenhof 1972: 30 and 35ff.), and was used for the transit dues of caravans and to pay travel charges (Veenhof 1972: 257ff). Thus, the rulers on the road from Ashur to Anatolia also obtained tin as part of travel payments.

Local, internal transactions mentioned in the Kültepe texts, involving both Anatolian merchants within Anatolia. And, inevitably, Assyrian merchants, dealt in wool, cereals, oil, straw, leather and honey (Orlin 1970: 58). Wool was sold for copper (Dercksen 1996: 58). The most important trade good inside Anatolia was copper, and Assyrian merchants were actively engaged in the copper trade in Anatolia (Larsen 1976: 91) (see Section 2.5.2).

2.10.2. Commodity prices and taxes

The value and price of particular materials were different depending on location. For example, fifteen shekels' worth of tin were worth one shekel of silver in Ashur (Dercksen 2004: 260). A text has been discovered describing the trade of an Assyrian merchant named Adad-Şulūlī, who, among other things, exchanged tin and copper for silver and sold textiles to obtain copper. He sold copper to obtain donkeys and female slaves. The rate of copper for silver was 50:1 (Dercksen 1996: 103–6). The price of a donkey was sixteen to seventeen shekels of silver; a donkey was sold for twenty to thirty shekels of silver to an added charge of two to three shekels in Kültepe (Dercksen 2004: 260). Textile, which

was worth two minas of tin, was the same price as eight shekels of silver. When the rate of textiles was doubled, the rate of donkeys was halved in Ashur. In Anatolia the price of textiles was fifteen to thirty shekels of silver, and the rate for a donkey was twenty to thirty shekels of silver (Dercksen 2004: 152–3). An Assyrian's standard rate in Anatolia was copper: tin: silver = 60:6:1 and the standard rate of silver was eight shekels of silver per shekel of gold in Ashur (Dercksen 2004: 153). In addition, the price was gradually increased every year (Dercksen 2004: 217–20). The price of lapis lazuli could be similar to that of silver: two shekels of lapis lazuli for one shekel of silver. However, it was two or three times the price in Kültepe. Assyrian merchants were involved with the distribution of high-quality lapis lazuli, cornelian and iron. For example, a woman paid five minas of silver for lapis lazuli (Dercksen 2004: 18–9). The cost for over 15kg of cornelian was five minas and six shekels of silver in Ashur (Dercksen 2004: 25). The price of silver in Anatolia was cheaper than in Mesopotamia, probably because it came from Anatolia (Barjamovic 2011: 13).

The caravans had to pay an export tax before leaving Ashur, which was 1/120 of the price of its contents. In addition, the tax rate in Kültepe was approximately 5% of textiles and 3% of tin. The ruler of Kültepe obtained these taxes and also held a monopoly over luxury items such as iron. In return for the payment of tax, Assyrian merchants received protection in the colonies and safe passage (Klengel 1979: 156–7). So, not only did the price of commodities vary between different

places and periods but the tax rates were also changed in each place.

2.10.3. Discussion of the price and value of commodities

Table 2.3. Comparative value of bronze daggers and prices in Anatolia.

(Source: modified of Barjamovic 2011: table 1 on 14)

Class	Average of price	Conversion	100% copper daggers	10% tin daggers
One kilo of refined copper	c. 2 shekels of silver	c. 16.6g of silver	c. 9 daggers	c. 4 daggers
One kilo of tin	c. 28 shekels of silver	c. 232.4g of silver	c. 127 daggers	c. 56 daggers
One sheep	c. 2 shekels of silver	c. 16.6g of silver	c. 9 daggers	c. 4 daggers
One donkey	c. 20 shekels of silver	c. 166g of silver	c. 91 daggers	c. 40 daggers
One female slave	c. 20 shekels of silver	c. 166g of silver	c. 91 daggers	c. 40 daggers
One common *kutānum*–textile	c. 12 shekels of silver	c. 99.6g of silver	c. 54.5 daggers	c. 24 daggers
One fine *kutānum*–textile	c. 20 shekels of silver	c. 166g of silver	c. 91 daggers	c. 40 daggers
One *abarnium*–textile	c. 25 shekels of silver	c. 132.5g of silver	c. 113.6 daggers	c. 50 daggers
One thin (*raqqutum*) textile	c. 30 shekels of silver	c. 249g of silver	c. 136.3 daggers	c. 60 daggers
One kilo of ordinary wool	c. 1/3 shekels of silver	c. 2.8g of silver	c. 1.5 daggers	c. 0.7 daggers
One hundred loaves of bread	c. 1/3 shekels of silver	c. 2.8g of silver	c. 1.5 daggers	c. 0.7 daggers
The village of Tahišra at Kaneš	c. 300 shekels of silver	c. 2490g of silver	c. 1363.6 daggers	c. 600 daggers

Bronze is defined as ‘an alloy of copper (typically about 90 per cent) and tin (typically about 10 per cent)’, meaning pure copper (Darvill 2008: 61). However, it is difficult to determine pure copper, because most bronze artefacts have not been chemically analysed. So, this research will compare to the form of bronze at the present. For the sake of illustrating a point, this section operates on the assumption that all bronze contained 10% tin. It is estimated that about two tons of tin passed through the *Kārum* Kanesh per year in the period of the level II remains. This implies that around 20 tons of bronze was produced per year. The amount of tin produced in Kültepe, as calculated from the parts of the Kültepe archives so far analysed, is 60,000kg, although this figure will increase as time goes on and more of the other texts currently unpublished in the Museum of

Ankara are examined (Barjamovic 2011: 11–12 and note 55 on 12).

According to the data from Kaman-Kalehöyük, seven daggers were found from the early second millennium BC. Five of them could be weighed and the results were: 134.8g, 108.4g, 42.8g, 161.4g and 101.2g (Consecutive Nos 2–6) (see Table 3.7). The average weight of a dagger was 109.72g. Five spearheads were found from this period, four of which could be weighed: 97.8g, 154.6g, 82.5g and 201.6g (Nos 17–20). The average weight of a spearhead was 134.125g. If twenty tons of bronze was produced per year, and if a typical dagger weighed c. 110g and a typical spearhead weighed c. 134g, then there was enough metal to produce 181,818 bronze daggers or 149,254 bronze spearheads per year. While unlikely totals, these numbers serve to underline the sheer quantity of metal passing through the *kārum* system annually.

Table 2.3 shows, 1kg of copper= 2 shekels of silver, 1g = 0.002 shekels of silver, while 1kg of tin = 28 shekels of silver and 1g = 0.028 shekels of silver.

Copper (90%) Xg × 0.002 + Tin (10%) Yg × 0.028 = **Z shekels of silver**

Given the average weight of a dagger from Kaman-Kalehöyük, it is possible to calculate the price of a typical tin-bronze dagger: 99g × 0.002 + 11g × 0.028 = **0.506 shekels of silver**. Similarly, the price of a typical spearhead from

Kaman-Kalehöyük would be 120.6g × 0.002 + 13.4g × 0.0028 = **0.6164 shekels of silver**. In contrast, a pure copper dagger of the same weight would cost only **0.22 shekels of silver**, and a pure copper spearhead **0.268 shekels of silver**.

This indicates very clearly that bronze daggers and spearheads were 2.3 times more expensive than an equivalent artefact made in pure copper. This result also applies to other commodities, and might suggest that while archaeologists have not always made this distinction clear, for example when discussing metal artefacts from tomb groups, objects made from tin-bronze would have been considerably more expensive, and so probably more valued, than those made from either pure or arsenical copper.

Table 2.3 also shows that 1kg of tin was fourteen times the price of 1kg of refined copper; in fact, tin was one of the most expensive trade commodities in the early second millennium BC. As far as animals were concerned, a donkey was ten times the price of a sheep, because donkeys were valuable animals in terms of their use for trade in this period. The price of a sheep was the same as 1kg of refined copper or two shekels of silver; these, it seems, were not high values. In contrast, a donkey and a female slave were the same high price, twenty shekels of silver, as were fine textiles. Indeed, a fine, thin textile was more expensive than a female slave. Some kinds of textiles were transported and each of these was priced at between twelve and thirty shekels of silver, being ranked in terms of price by their

quality. The most expensive textiles, as intimated above, were thin ones, which were sold for thirty shekels of silver. As a material, wool was cheap; however, textiles were made out of it, which increased its value. A hundred loaves of bread were one-third of a shekel of silver, the same price as wool, while a common *kutānum* textile could command a price of 400 loaves of bread. The 1kg of tin and 90kg of copper required to make 10% tin bronze weapons were the equivalent of 208 shekels of silver or 10.4 donkeys. Even whole villages were bought and sold (Barjamovic 2011: 13).

2.11. Summary and conclusion

This chapter has introduced the main sites in central Anatolia and has described, among other things, Assyrian trade and merchants. In particular, the texts from Kültepe illustrate aspects of this trade. However, Assyrian texts do not often mention internal Anatolian trade. Nevertheless, Assyrian merchants not only conducted trade into and out of Anatolia but also engaged in internal Anatolian trading. In addition, this chapter has discussed the sources of raw materials, such as tin and copper, and metalworking technology, particularly in terms of the workshops at Hirbemerdon Tepe and Kültepe. Furthermore, it has shown the comparative values of trade commodities in an attempt to understand the concept of value and prices for people in the early second millennium BC.

While the texts point to significant dealings in metal in the early second

millennium BC, bronze products are not often mentioned in the Kültepe archives. Most raw materials, such as tin and copper, were transacted in this period by Assyrian and Anatolian merchants. Copper was traded in Anatolia because rich sources of copper were to be found at Ergani in south-east Anatolia in the early second millennium BC. However, tin was imported from Ashur because it was not available in sufficient quantities locally, even though there were sources of tin in south-east Anatolia. Moreover, the availability of bronze meant that the cities came to obtain the political and economic power to have bronze artefacts in the early second millennium BC. However, *kārums* were separate from the royal palace, where political power lay, because *kārums* were commercial facilities for merchants. Even though the palace had organised trading activities for economic reasons, and it was likely also to obtain political independence inevitably. Increased power for the palace meant they enriched the equivalent for merchants. In this way, the city-states were developed and obtained authority independently (Dercksen 1996: 182; Sagona and Zimansky 2009: 234).

The location of *kārums* and *wabartums* was mostly unclear. However, the role of trade and ancient names are being elucidated from the Kültepe archives. Barjamovic's research (2011: fig. 49) has determined the rough positional relationships from the texts, but unfortunately it is not possible to link modern archaeological sites with historically attested *kārums* and *wabartums* because the objects that could confirm the association were rarely excavated from the sites.

The discussion of weights and measures has shown that scales could vary locally, which would have created problems of standardisation and conversion for trade because of the impact of different systems of weights and measures on the price of commodities at each site. Besides, there were at least two standards excluded from the standard weight: scales for underweight and overweight commodities. Taxes were also applied there. Hence, it must have been an enormous cost for trading, as smuggling was rampant among the merchant communities.

It was also shown that price and value are in direct proportion, because a material such as bronze – for example, a decorated sword in tombs, was absolutely high in price. Nonetheless, it cannot be said that all bronze artefacts were valuable regardless of the quality, because the price varied depending on the purity. For instance, copper had various degrees of quality, and refined copper was the best quality, according to the Kültepe archives (Dercksen 1996: 34). The texts indicate that the impure copper could be changed in Durhumit, one of the colonies (Barjamovic 2011: 14) (see Section 2.5.2). This study has also tried to describe the value of commodities using information about commodity prices in the texts (see Section 2.10.3). According to Table 2.3, it could be that bronze objects were more expensive than other commodities because the raw materials of bronze, especially tin, were already high in price. Indeed, as shown in Section 2.10.3, the price of bronze was more than double that of pure copper artefacts.

Assyrian merchants were actively involved in the internal Anatolian markets, as is evidenced by the fact that fragments of cuneiform tablets were found in medium-sized sites characteristic of central Anatolia, indicating either that Assyrian merchants operated in those towns during the early second millennium BC or that Anatolian merchants had brought those texts into the internal Anatolian markets. If so, Anatolian merchants could have recorded and used the cuneiform. However, this has not been clarified yet. In fact, the tablets that were found in Kaman-Kalehöyük have not been absolute provenanced.

In conclusion, there were numerous city-states in the early second millennium BC, in particular in south-east Anatolia. However, each site was relatively small. Nevertheless, these places played an important role in trade in this period, because this region had especially rich copper mines, and various metal workshops thus existed, such as at Hirbemerdon Tepe. Using the trade route in south-east Anatolia, Assyrian merchants seem to have frequently visited these sites to exchange metals. Obviously, Kültepe best represented Anatolia in this period. A few other sites were found in central Anatolia of more extensive scale than those in south-east Anatolia. Regardless of the scale of sites, however, traces of merchants have been found everywhere. However, it is difficult to determine whether they were Assyrian or Anatolian merchants.

Finally, the most important limitations need to be considered. Firstly, a number of the cuneiform tablets from Kültepe still remain unexamined. If these texts were published the details of Assyrian trade might be better understood, as would be the content of the Anatolian markets. Secondly, the cuneiform tablets were not found in all sites. In fact, the archives are from only three excavated sites in central Anatolia, along with Kültepe: Alishar Höyük, Boğazköy and Kaman-Kalehöyük. None of these sites has been completely excavated. A further study could assess the full form of the commercial activities between Assyrian and Anatolian merchants. Thirdly, it is necessary to clearly understand what trade brought to the development of metal technology and metalworking. It is difficult to fully describe the contemporary metal technology as there is much lacking in the archives, but the relation between metalworking and trade will need further investigation, because it is likely that the expansion of trade could be correlated with the development of metalworking.

Chapter 3: Introduction to the site and excavations at Kaman-Kalehöyük

3.0. Introduction

This chapter will introduce Kaman-Kalehöyük, which is the key site in this thesis. It will provide information about the location, size, chronology and remains of the main buildings at this site. It will also present a detailed account of the position of bronze artefacts and the associated human remains in the debris of the violent destruction event suffered at this site. Additionally, I have created a numbering system for bronze finds: from Kaman-Kalehöyük (Nos 1–99, Table 3.7); from Kültepe (Nos 100–260 and Nos 733–35, Table 4.6); from Boğazköy (Nos 261–407, Table 4.4); from Alishar Höyük (Nos 408–565, Table 4.2); and from other Anatolia sites (Nos 566–682 and Nos 736–38, Table 4.7).

3.1. Kaman-Kalehöyük

3.1.1. The site and excavations

Kaman-Kalehöyük is located in Kırsehir province, Turkey, in the middle of the Anatolian plateau, surrounded by the Kızılulırmak. The site location is approximately 100km south-east of Ankara and approximately 3km east of Kaman, which is along the ancient route from Ankara to Kayseri. The site is a mound of trapezoidal shape, approximately 280m in diameter and approximately 6.15ha in area. Its height is approximately 16m. It is, therefore, a medium-sized site in terms of the Anatolian plateau, where the average site size is around 10ha

(Omura 1999: 4). The excavations at Kaman-Kalehöyük have been directed by S. Omura, head of the Japanese Institute of Anatolian Archaeology, since 1986. The 2013 excavation season was the 28th conducted at the site.

Excavations at Kaman- Kalehöyük take the form of square trenches 10m × 10m (so-called 'small trenches') spread across three excavation areas: the north, the south and the city wall areas (Omura 2008: 158). A total of 96 small trenches has been excavated so far: 36 in the north, 55 in the south and 5 in the city wall (see Fig. 3.1). The stratigraphy at Kaman-Kalehöyük is divided into four phases, I to IV. Each phase is divided into sub-phases denoted by lower-case letters (e.g. Phases Ia and Ib). Finally, a further Arabic numeral refers to the layer number (e.g. Phase Ia 1–3). Phase III is not yet known in great detail, although this stratigraphy is built on the latest information. Some phases, such as Phase IIb, appear to be missing, because the stratigraphy has been revised and rebuilt from the previous information by S. Omura.

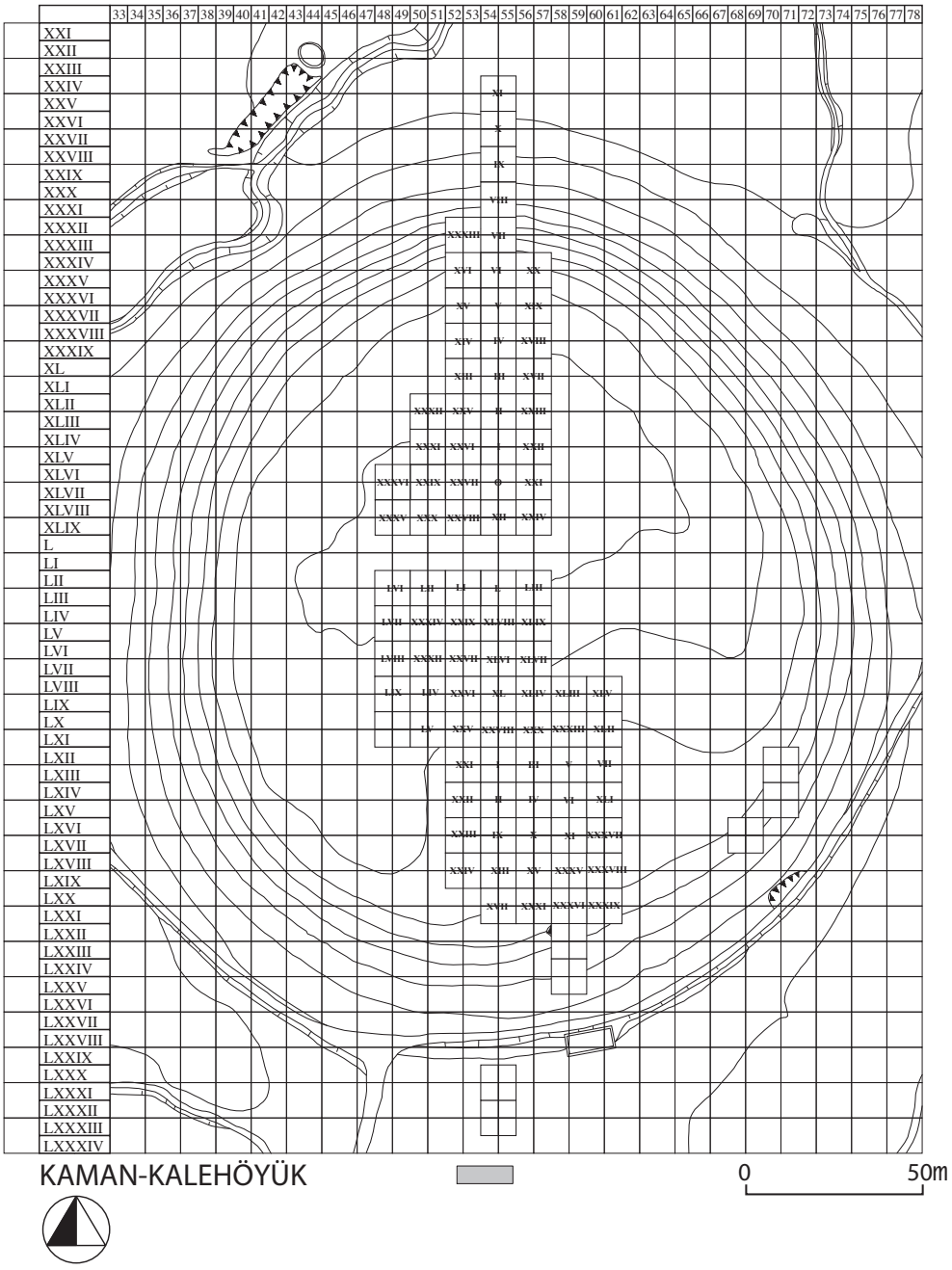


Fig. 3.1. Plan view of Kaman-Kalehöyük, showing the site grid system.

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

In broad terms the phases can be dated as follows:

Phase I: fifteenth to seventeenth centuries AD

Phase II: twelfth to fourth centuries BC

Phase III: twentieth to twelfth centuries BC

Phase IV: twenty-third to twentieth centuries BC

However, the excavators have not been able to reach virgin soil yet, so it might be possible to reach layers dating to earlier in the prehistoric period (see below and Omura 2011: 1096–108). According to the excavator, the sub-phases can be dated as follows:

Phase Ia 1–3: Ottoman period

Phase Ib 4–5: Byzantine period

Phase IIa 1–2: Hellenistic period (Alexander the Great and after)

Phase IIa 3–5: Late Iron Age (Lydian, Achaemenid)

Phase IIa 6–IIc 1: Middle Iron Age (Phrygian rule)

Phase IIc 2–3: Middle Iron Age (Alishar IV culture)

Phase IId 1–3: Early Iron Age (Dark Age)

Phase IIIa: Hittite Empire period

Phase IIIb: Old Hittite period

Phase IIIc: Assyrian Colony period (the period of interest in this dissertation)

Phase IVa 1–4: Intermediate period

Phase IVb 5–6: Early Bronze Age

The excavator has stated that the goals of excavation are as follows: 'The first is to establish a stratigraphy of the North Trench. The second is to gain an understanding of the settlement patterns corresponding to the Ottoman period in the South Trench and the Iron Age in the North Trench' (Omura 2011: 1096).

According to the stratigraphy presented above, it is clear that Phases I, II, IIIa, IIIb and IV at Kaman-Kalehöyük lie outside the scope of this study. However, a few details of Phase IIIa and b are provided here, because these subphases are not unrelated to the research topic. The buildings in Phase IIIa were divided into two layers in which seals and seal impressions were found. Phase IIIb had seven layers (Omura 1994: 122; Omura 2004: fig. 3 on 110 and 145). There were five grain silos of different sizes were found: the largest, in which a large number of seals and seal impressions were found (Omura 2004: 134), had a diameter of 15m and a depth of 5m. Wedged between two of these storage pits was a huge building complex 17m × 15m that consisted of three structures: the first floor, a half-basement on the ground floor and a basement (Omura 2004: 143–5). The basement was of stone, under a mud-brick wall.

Excavation of the buildings in Phase IIIc has revealed at least five separate layers so far. Most of the buildings of Phase IIIc were destroyed by the construction of silos in the Old Hittite period. Each layer had pots or vessels and some stamp seal

impressions. The first to fourth layers were contemporary with *Kārum* Kanesh level Ib and the fifth layer was contemporary with *Kārum* Kanesh level II (Omura 1995: 10). Other materials that could be identified were two cuneiform tablets. In the 1990 season part of a cuneiform tablet was found in the stone basement in Sector IV in the north area (Omura 1993: 20–1 and fig. 12 on 20; Omura 1994: 119). Its details are difficult to grasp, but, since the tablet was written in the Old Assyrian script, it belongs to the Old Assyrian period (Omura 1994: 119). Another cuneiform tablet was found from R317 in Sector XXV in the north area (Omura 2002: 5, fig. 35 on 14, figs 36–8 on 15 and figs 39–40 on 17). This tablet belongs to Phase IIIa of the Hittite Empire Period. However, S. Omura (2002: 5) suggests that the tablet belongs to an older layer: as the tablet was written in the Old Assyrian script, it probably does belong to the Old Assyrian period (Yoshida 2002: 133–7).

3.1.2. The important remainder of the materials

As mentioned in Chapter 1, this research builds upon the basic typological analysis that was undertaken for my MA dissertation in Japan. I have reorganised the information relating to the bronze artefacts that were found *in situ* within destruction level IIIc. Unfortunately, only a few reports on the Level IIIc excavation have been published. I have thus reviewed the excavated evidence using the preliminary excavation reports, the database of bronze artefacts and the excavation diaries, to which I was granted access for this purpose. Unfortunately,

I was not able to access the full range of information on the ceramics, the categories of small finds other than metal objects or the human skeletal material from destruction level IIIc, because much of this material has been given to other researchers to study. Hence, this paper cannot provide a comprehensive review of the destruction deposit.

In addition, the important point is whether Kaman-Kalehöyük had a *kārum* or a *wabartum* in the early second millennium BC. Firstly, it is important to compare the size of ruins, considering the average relative sizes of *kārum* and *wabartum*. It should be noted that the ruin at Kaman-Kalehöyü has not been excavated around the main tell. On the other hand, at Alishar Höyük, Boğazköy and Kültepe, which had *kārum* or *wabartum* areas, both the mound and the *kārum* or *wabartum* areas were excavated. Ideally comparisons should be made on a like-for-like basis, but this is impossible in this case because the area around main tell has not been excavated in Kaman-Kalehöyük. Therefore, comparisons were made between the mounds at each site. Magnetic field gradient surveys were used to survey around Kaman-Kalehöyük in 2005 (Kumagai *et al.* 2006: 204–5) (see Fig. 3.2). As a result, it is known that widespread ancient settlements existed around the mound. For example, a number of settlements were confirmed in the north area at Kaman-Kalehöyük, there are widespread rectangular settlements to the east of the mound, and settlement has spread out approximately 300m from the mound to the south (Kumagai *et al.* 2006: 204–5). It is likely that the settlement around the

mound existed in the early second millennium BC. However, it is not certain that there were *kārum* or *wabartum* areas here.

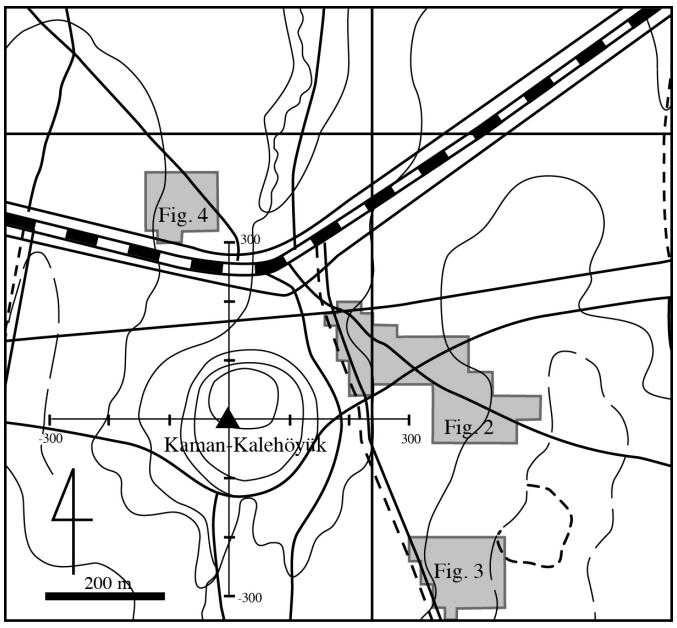


Fig. 3.2. Map of a magnetic survey at Kaman-Kalehöyük.

(Source: Kumagai *et al.* 2006: Fig. 1 on 203, by courtesy of Dr Kazuhiro Kumagai)

3.2. The destruction level of Kaman-Kalehöyük Phase IIIc: architecture and stratigraphy

The core of the settlement during Phase IIIc was composed of the buildings in the west area of the mound. Rooms (R) 148, R150, R298, R299, R305, R306, R370, R274 and R367 formed the centre of a large building complex. The eastern buildings were across the courtyard and included R208, R220, R221 and R231. This building extended to the north and the north-east in Sector 0, and included R153 in Sector I (Omura 1999: 8–10; Omura 2000: 24–8; Omura 2001: 27–9; Omura 2005: 26, fig. 62 on 31 and 33) (see Fig. 3.3).

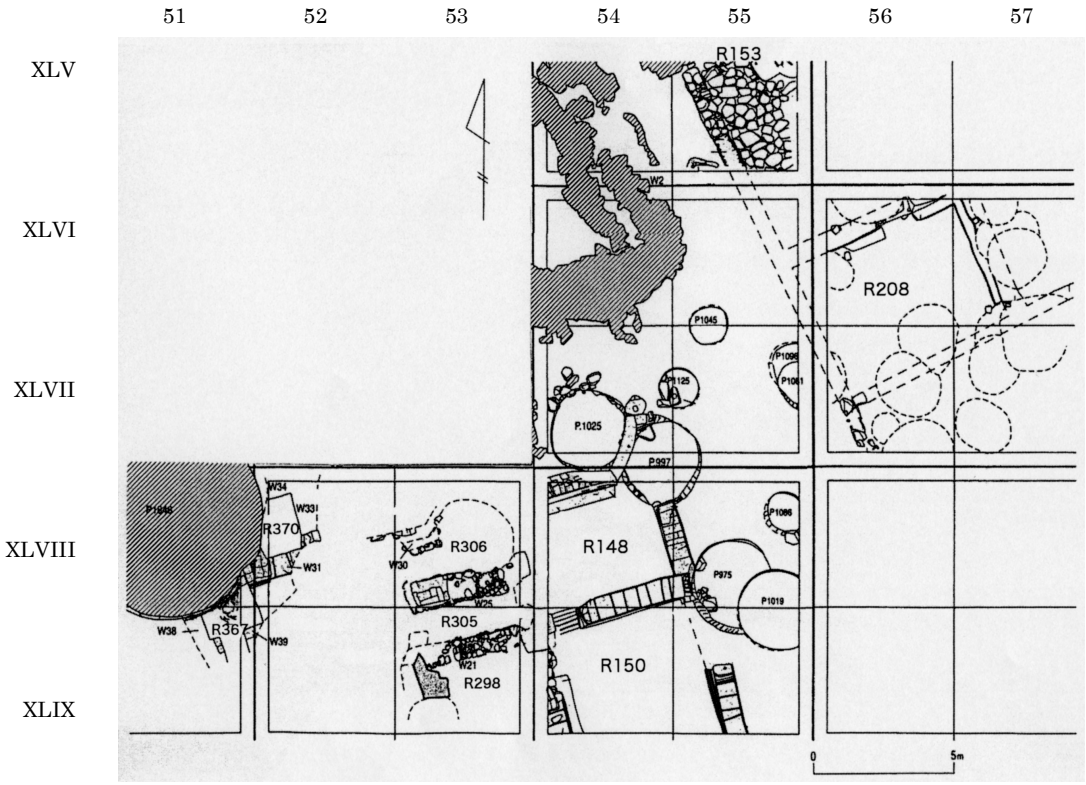


Fig. 3.3. Phase IIIc destruction level at Kaman-Kalehöyük.

(Source: Fig. 3.2. as published by Omura 2005: fig. 62 on 31)

3.2.1. The buildings in the west (see Figs 3.3–3.4)

R148 and R150 were part of the first complex building in Sector XII in the north area, which is located in the centre of the mound. Excavation in Sector XII stopped in 2000. During the 1994 excavation season burnt soil was identified close to the floor of R112 in the Old Hittite period. The most striking feature, however, was a number of burnt human skeletons (Omura 1995: 7). The building at the north-west–south-east and the north-east–south-west walls was constructed using mud bricks approximately 0.80m wide, although the mud-bricks in the north wall were smaller than those in the east wall. The building also had a courtyard, named R149 in the XLVIII-55 grid and R151 in the XLIX-55 grid (Omura 1995:

7 and fig. 10 on 21; Omura 1995: 8 and fig. 10 on 21). The north wall and part of the east wall were destroyed by the later Pit (P) 997, which was cut into R148, while, in addition, the north part of the north wall of R148 was destroyed by P1025. Inside the north wall in R148 a burnt body (No. 683) was found on a bench which was c. 0.5m wide, while a further two burnt human skeletons, Nos 684–685, were found near the north wall. An entrance to R148 c. 1m wide in the south wall that connected R148 and R150 was covered in thick plaster. A huge red-slip vessel or jar with triangular handles was found *in situ* near the south wall (Omura 1995: 7 and 10). According to Omura (1995: 10), the same type of vessel or jar was also found in *Kārum* Kanesh level Ib. On the floor in R148 a piece of carbonised wooden roof support was found, along with a number of pot or vessel sherds. Unfortunately, there are no radiocarbon dates available yet. A bronze dagger was found along with a red-slipped pot or a vessel on the floor at the east wall, along with a seal impression (Omura 1995: 7, 10 and Photo 24 on 45). A piece of carbonised timber with a diameter of c. 150mm had been used as a doorsill in R150 (Omura 1995: 7 and fig. 10 on 21).

R150 is located south of R148. The south wall remains unexcavated. It is probably that timbers around 1.5m in length and with a diameter of c. 0.2m were used in the foundation of the east wall, where carbonised wood was recovered. The east wall also had a bench, which has not been excavated, and an entrance (Omura 1995: 7–8, fig. 10 on 21 and photos 3–4 on 35). The east wall in R150

has a thick plaster. The burnt and fragile objects which were found in R150 indicate that it was damaged more than R148 by a fire. In addition, a large amount of carbonised wood was found in R150, and the room had two distinct burnt layers. The wood from these has not yet been analysed. Three skeletons were found under the first burnt layer; beside one, a man who was of middle age (Skeleton No. 686), a bronze dagger was found (No. 4) (Katayama 1998: 208). In addition, another burnt layer was found under the top floor in R150, where around twenty-two skeletons were found on the second floor. Thus, S. Omura (1995: 8; 2004: 151) suggests that the building consisted of two floors. In fact, there were signs of the collapse of an upper and a lower floor. Various bronze objects were found in the XLVIII-54 grid in R148 and in the XLIX-54 grid in R150 (see Fig. 3.4. and Table 3.1).

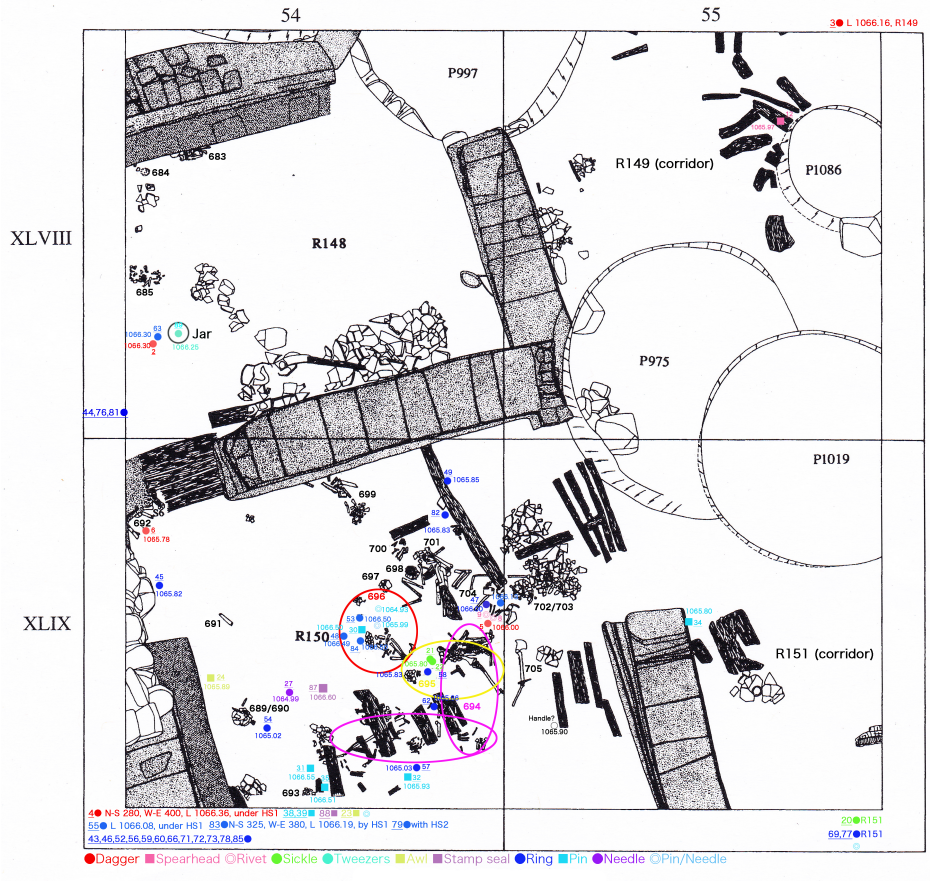


Fig. 3.4. Focus on the find spots of bronze artefacts and human remains in R148 and R150 in the lower destruction level (published by Katayama 1998: 206, and modified to show the position of human remains and bronze artefacts).

Table 3.1. Bronze artefacts found in Rooms 148 and 150. Items in brackets were found close together.

	Weapons		Tools			Personal Items				Others
Context	Dagger	Rivets	Sickles	Awls	Needle	Tweezers	Pins	Rings	Stamps	
Room 148	No. 2					No. 99		No. (54), 73, (86), (91)		
Room 150 (upper destruction level)	No. 4							No. 65, 89, 93		
Room 150 (lower destruction level)	No. 5, 6	No. 15, 16	No. 31, 32	No. (33), 34	No. 37		No. 40–42, 45 No. (48, 49)	No. 55, 57–59, 63, 64, 67, 68, 72, 92, 94 No. (53, 56, 62, 66, 69) (70, 76, 81–83, 88, 95)	No. 97, (98)	a Handle frag. Two Pin/Needles (a Pin/Needle)

Two courtyards were found in Sector XII – R149 and R151 in the north area. R151 is located to the south of R149. These courtyards continued into the north-east grid, XLVI-55, and the north grid, XLVII-54/55, in Sector 0 was destroyed by a large pit in the Old Hittite period. A part of R149 produced much carbonised wood c. 0.7m in length; however, it has not yet been analysed. Most wood pieces were similar in form and size to those from R148 in Sector XII. In addition, a number of burnt human skeletons were found in the south-east grid, XLVII-55 (Omura 1995: 7 and fig. 10 on 21), inside and outside (in R149) R148 in Sector XII. However, the human skeletons that came from outside the room have not been analysed. Various bronze objects were found in the XLVIII-55 grid in R149 and in the XLIX-55 grid in R151 (see Fig. 3.4 and Table 3.2).

Table 3.2. Bronze artefacts found in Rooms 149 and 151 and Sector 0.

	Weapons		Tools		Personal Items		Others
Context	Dagger	Spearheads	Sickles	Awls	Pins	Rings	
Room 149	No. (3)	No. 19					
Room 151			No. (30)		No. 44	No. (79), (87)	(a Pin/Needle)
Sector 0		No. 17, 18		No. (36)		No. (60–61), (77), (85)	(a Pin/Needle)

Six pits, P997, P1025, P1045, P1081, P1086 and P1125, were found in Sector 0 in the north area. However, the north-west area in Sector 0 was also destroyed by a pit in the Old Hittite period. This area was used for a corridor, which continued to R149 in Sector XII (Omura 2005: fig. 62 on 31). Bronze objects were found in the XLVII-55 grid in Sector 0 (see Figs 3.3–3.4 and Table 3.2).

R298 in Sector XXVIII in the north area is located west of R150. The east wall of

this room, W23, was also used as the west wall of R150. W23 and W22, that make up the east wall of R298, were made of mud-bricks. The north wall, W21 in R298, connected to W5, which divided R148 and R150 (Omura 2000: 25 and fig. 49 on 24). A beaked pitcher was found in an entrance between R298 and R150 (Omura 2000: 25 and figs 50–1 on 25). A red-slipped beaked pitcher (Omura 2000: 25 and figs 52–6 on 26), a bronze stamp (Omura 2000: 25 and fig. 57 on 27) and a seal impression (Omura 2000: 25 and figs 58–9 on 27) were found on the floor in R298. Unfortunately, the bronze stamp from R298 gave no detailed information.

R299 is located north of R298 and west of R148 in Sector XII (Omura 2000: 25 and fig. 49 on 24). W24, which formed the east wall of R299 and the west wall of R148 (Omura 2001: 27 and fig. 66 on 25), was destroyed by fire. However, human skeletons (Omura 2001: 27 and figs 67–8 on 28–9) and a bronze dagger (Omura 2001: 27 and figs 69–70 on 27–8) were found in the destruction debris (Omura 2001: 27 and figs 71–2 on 30). In addition, a seal impression was found inside the room (Omura 2000: 28 and fig. 60 on 27).

W25 is located in the middle of R299 (Omura 2001: 27–8) and divides R305 (in the south) from R306 (in the north) in Sector XXVIII (Omura 2001: 28 and fig. 66 on 25). A part of the west wall of R305 was destroyed by a pit. Stones with soot were scattered across the room (Omura 2001: 28 and fig. 73 on 29). Parts of

the west and east walls of R306 were also destroyed by pits. However, a part of the north wall, W30, was found in R306 (Omura 2001: 28 and fig. 66 on 25). Various bronze artefacts were found in the XLIX-53 grid in R298, in the XLIX-53/XLVIII-53 grids in R299, in the XLIX-53 grid in R305 and in the XLVIII-53 grid in R306 (see Fig. 3.3 and Table 3.3).

Table 3.3. Bronze artefacts found in Rooms 298, 305, 306 and 370.

	Weapons		Personal Items		Others
Context	Dagger	Axe	Pins	Rings	
Room 306	No. (7)				
Room 298			No. 52		
Room 298/305			No. (47)	No. (71)	
Room 370		(an Axe frag.)			(a Pin/Needle)

In addition, R370 was built a short distance away from the west part of the huge complex building found in Sector XXVIII. The west wall of the room, which was shared with R367 in Sector XXX, was destroyed by P1848 (Omura 2005: 26, fig. 62 on 31 and fig. 63 on 33). A bronze stamp (Omura 2005: 33 and fig. 65 on 34), a seal impression (Omura 2005: 33 and fig. 66 on 34) and a bronze pin (Omura 2005: 33 and figs 67–8 on 35) were found in R370, and a vessel was also found on the floor of the room (Omura 2005: 33 and figs 69–70 on 35). Additionally, eleven burnt human skeletons were found in R370; most of them were children aged 2–3 years (Omura 2005: 26, 33 and fig. 64 on 34). Bronze artefacts were found in the XLVIII-52 grid in R370 (see Fig. 3.3 and Table 3.3).

R274 was found in Sector XXX in the north area during the 1998 excavation season. The room in part of the east and west areas was destroyed by a huge pit (Omura 1999: 4, fig. 7 on 30 and photo 24 on 59). A hearth, H181, was found in the room. In addition, five rectangular boxes with mud-brick foundations, c. 0.15m wide and c. 0.3m in length, were found beside the south wall, W44, had a stone floor (Omura 1999: 4–5, fig. 7 on 30 and photo 25 on 59). Part of an arm of a clay figure (Omura 1999: 5 and fig. 24: 6 on 48) and two jars (Omura 1999: 5 and fig. 28:14–15 on 52) were found in the destruction debris in R274.

R367 in Sector XXX was excavated in 2004 (Omura 2005: 26, fig. 62 on 31 and fig. 63 on 33). However, no bronze artefacts were found.

3.2.2. The buildings in the east (see Fig. 3.3)

R208 is part of the main building in the east of Sector XXI in the north area. The room was destroyed by fire (Omura 1997: 9, fig. 8 on 32 and photo 33 on 59). Its mud-brick wall was painted with several layers of plaster. Carbonised beams, which were probably from collapsed roof material, were found on the floor (Omura 1997: 9, fig. 8 on 32 and photo 34 on 59); however, these have not been analysed. The north wall had a mud-brick bench, c. 0.15m in breadth (Omura 1999: 8, fig. 13 on 36 and photo 45 on 66). Similar benches were found in the west wall, W5, and east walls of R208, R148 and R150 (Omura 1999: 8 and fig. 13 on 36). A large red-slipped and painted pot or vessel with three handles was

found on a bench beside W5 (Omura 1999: 9, fig. 27: 5 on 51 and photo 46 on 66). This vessel was a similar type to that found by the south wall of R148 (Omura 1999: 9).

R220 is located east of R208 and R221 is located south of R208 in Sector XXI. Excavation suggests that the rooms in the eastern sector, such as R208, R220 and R221, were built during the same period as the rooms in the western sector. R231, in the south-east area of Sector XXI, is located some way from the main buildings, but seems to have been used in the same period as those rooms mentioned above (Omura 1997: 9 and fig. 8 on 32). Various bronze artefacts were found in the XLVI-56/57 and XLVII-56 grids in R208, and in the XLVI-57 grid in R220 (see Fig. 3.3 and Table 3.4).

Table 3.4. Bronze artefacts found in the XLVI-56–57, XLVII-56, XLVIII-57 and XLIX-57 grids, Room 153 and Sectors III and V.

	Weapons	Tools		Personal Items		Others
Context	Spearheads	Sickles	Awl	Pins	Rings	
XLVI–56 grid				No. (43)		(a Pin/Needle)
XLVI–57 grid					No. (96)	
XLVII–56 grid				No. (51)		
XLVIII–57 grid				No. 39 No. 50		
XLIX–57 grid		No. (28)			No. (80)	
Room 153	No. 20		No. (35)	No. (46)	No. (74–75) No. (78)	
Sector III		No. 25–27			No. (84) No. (90)	
Sector V	No. 21					

R153 in Sector I is part of the eastern complex of buildings (Omura 1999: 9). The burnt layers within it were contemporary with similar layers in Sectors XII and 0 (Omura 1995: 8). The room was found to have stone foundations to the north and

west walls (Omura 1995: 8 and fig. 10 on 21) and a stone floor, upon which six burnt human skeletons were found (Omura 1995: 8 and photo 26 on 46). Bronze artefacts were found in the XLV-55 grid in R153 (see Fig. 3.3 and Table 3.4).

To the north the continuation of Sectors III and V was destroyed by a huge pit. There is less evidence for similar burnt layers in these areas. Nevertheless, the contexts showed that several layers belonged to the early second millennium BC (Omura 1995: 8, fig. 10 on 21 and photo 27 on 47). Bronze artefacts were found in Sectors III and V (see Fig. 3.3 and Table 3.4).

A number of pits were found in Sector XXIV (Omura 1996: 10, fig. 13 on 30 and photo 45 on 63). No buildings were found in the area but, from the contexts, these pits were contemporary with the west buildings in Sector XII (Omura 1999: 10). One of the pits was painted with white plaster (Omura 1996: 10 and fig. 13 on 30) and one side of P1233 was reinforced stone. Three vessels were found on the floor of P1233 (Omura 1996: 10, fig. 13 on 30 and photo 46 on 64; Omura 1997: 10 and fig. 6 on 30). S. Omura (1997: 10; 1999: 10) points out that rubbish pits were used by the inhabitants of the first buildings. Bronze artefacts were found in Sector XXIV (see Fig. 3.3 and Table 3.4).

W11 and W12, which run from east to west, were found in Sector LIII in the south area (Omura 2002: 34 and 36). A burnt layer c. 50–100mm thick was found

on these two walls. W11, which was c. 0.7m thick and to the north of W12, had some stone foundations but was destroyed by a pit (Omura 2002: 34). These walls were contemporary with the first buildings in the north area, because R150 in Sector XII probably continues to the south (Omura 2002: 36). Unfortunately, an area which connects the north to the south areas was left unexcavated in order to secure a passage. No bronze artefacts were found in the south area.

Table 3.5. Skeletal information from Kaman-Kalehöyük.

Consecutive No.	Class	Grid No.	Kaman Skeleton No.	Gender	Age	Characteristic	Context	Bronze artefacts	References
683	Skeleton	XLVIII–54	S1	M	c. 30–40	H: under 169cm, slender, burnt	XII, R148 on the bench		Katayama (1998)
684	Skeleton	XLVIII–54	S2	–	c. 6–8	Juvenile, burnt	XII, R148		Katayama (1998)
685	Skeleton	XLVIII–54	S3	F	c.30–60	small height? Slender, burnt	XII, R148	Dagger (2), Ring (73), ?Tweezers (99)	Katayama (1998)
686	Skeleton	XLIX–54	S1	M	c. 40–60	H: c.163cm and medium sized, burnt	XII, R150 upper level	Dagger (4), Rings (65) (93)	Katayama (1998)
687	Skeleton	XLIX–54	S2	–	c. 0.6	infant, burnt	XII, R150 upper level	Ring (89)	Katayama (1998)
688	Skeleton	XLIX–54	S3	–	c. 0.9	infant, burnt	XII, R150 upper level		Katayama (1998)
689	Skeleton	XLIX–54	S4	M?	c. 20–50	burnt	XII, R150 lower level	Ring (64), Needle (37), ?Awl (34), ?Stamp (97)	Katayama (1998)
690	Skeleton	XLIX–54	S4	F	c. 20–40	H: c.150cm, slender, burnt	XII, R150 lower level	Ring (64), Needle (37), ?Awl (34), ?Stamp (97)	Katayama (1998)
691	Skeleton	XLIX–54	S5	M	c. 20–40	medium sized, burnt	XII, R150 lower level	?Ring (55), ?Awl (34)	Katayama (1998)
692	Skeleton	XLIX–54	S6+S7	M	c. 40–60	medium height, slender, burnt	XII, R150 lower level	Dagger (6), ?Ring (55)	Katayama (1998)
693	Skeleton	XLIX–54	S8	M?	c. 30–50	burnt	XII, R150 lower level	Pins(41) (45)	Katayama (1998)
694	Skeleton	XLIX–54	S9+S10+S26	M	c. 25–40	small height, slender, burnt	XII, R150 lower level	Pin (42), Ring (67), ?Rings (72) (68), ?Stamp (97)	Katayama (1998)
695	Skeleton	XLIX–54	S11+S26	–	c. 5–7	Juvenile, burnt	XII, R150 lower level	?Rings (68) (72)	Katayama (1998)
696	Skeleton	XLIX–54	S12+S21	M	c. 30–50	medium height, slender, burnt	XII, R150 lower level	Sickles (31) (32), Pin (40), Rings (58) (63) (94), ?Stamp (97)	Katayama (1998)
697	Skeleton	XLIX–54	S13	F	c. 40–60	burnt	XII, R150 lower level		Katayama (1998)
698	Skeleton	XLIX–54	S14	M?	c. 14–18	young adult, burnt	XII, R150 lower level	Ring (82)	Katayama (1998)
699	Skeleton	XLIX–54	S15	F	c. 20–40	H: c.161–164cm, medium sized, burnt	XII, R150 lower level		Katayama (1998)
700	Skeleton	XLIX–54	S16	F	c. 40–60	slender, burnt	XII, R150 lower level		Katayama (1998)
701	Skeleton	XLIX–54	S18	M?	c. 18–30	small height? Medium sized, burnt	XII, R150 lower level		Katayama (1998)
702	Skeleton	XLIX–54	S19+S23	–	c. 4–6	Juvenile, burnt	XII, R150 lower level		Katayama (1998)
703	Skeleton	XLIX–54	S19	M?	c. 12–16	young adult, burnt	XII, R150 lower level	?Dagger (5)	Katayama (1998)
704	Skeleton	XLIX–54	S22	–	c. 5–7	Juvenile, burnt	XII, R150 lower level	Ring (57)etc.	Katayama (1998)
705	Skeleton	XLIX–54	S20	M?	adult	assemblage, burnt	XII, R150 lower level	?Dagger (5)	Katayama (1998)
706	Skeleton	XLIX–54	S9/Individual K	–	c. 6–8	Juvenile, burnt	XII, R150 lower level		Katayama (1998)/Hunt (2005)
707	Skeleton	XLIX–54	S11/Individual L	–	–	infant/Juvenile, burnt	XII, R150 lower level		Katayama (1998)/Hunt (2005)
708	Skeleton	XLIX–55	Individual Q	–	–	burnt	XII, R151	?Sickle (30), ?Pin (44), ?Rings (79) (87), ?Pin/Needle	Hunt (2006)
709	Skeleton	XLIX–55	Individual S	–	–	Juvenile, burnt	XII, R151	?Sickle (30), ?Pin (44), ?Rings (79) (87), ?Pin/Needle	Hunt (2006)
710	Skeleton	XLIX–55	Individual T	–	c. 3–5	infant, burnt	XII, R151	?Sickle (30), ?Pin (44), ?Rings (79) (87), ?Pin/Needle	Hunt (2006)
711	Skeleton	XLIX–55	Individual U	–	–	older than Individual T, Juvenile, burnt	XII, R151	?Sickle (30), ?Pin (44), ?Rings (79) (87), ?Pin/Needle	Hunt (2006)
712	Skeleton	XLIX–55	Individual V	–	c. 10–12	Juvenile, burnt	XII, R151	?Sickle (30), ?Pin (44), ?Rings (79) (87), ?Pin/Needle	Hunt (2006)
713	Skeleton	XLIX–55	Individual W	–	adult	no information, burnt	XII, R151	?Sickle (30), ?Pin (44), ?Rings (79) (87), ?Pin/Needle	Hunt (2006)
714	Skeleton	XLIX–55	Individual X	–	adult	no information, burnt	XII, R151	?Sickle (30), ?Pin (44), ?Rings (79) (87), ?Pin/Needle	Hunt (2006)
715	Skeleton	XLIX–55	Individual Y	–	adult	no information, burnt	XII, R151	?Sickle (30), ?Pin (44), ?Rings (79) (87), ?Pin/Needle	Hunt (2006)
716	Skeleton	XLIX–55	Individual Z	–	adult	no information, burnt	XII, R151	?Sickle (30), ?Pin (44), ?Rings (79) (87), ?Pin/Needle	Hunt (2006)
717	Skeleton	XLV–55	S1	–	–	burnt	I, R153	Rings (78) (84)	Omura, S. (1995)
718	Skeleton	XLV–55	S2	–	–	no information, burnt	I, R153	?Spearhead (20), ?Pin (46), ?Awl (35), ?Rings (74) (75) (90)	Omura, S. (1995)
719	Skeleton	XLV–55	S3	–	–	no information, burnt	I, R153	?Spearhead (20), ?Pin (46), ?Awl (35), ?Rings (74) (75) (90)	Omura, S. (1995)
720	Skeleton	XLV–55	S4	–	–	no information, burnt	I, R153	?Spearhead (20), ?Pin (46), ?Awl (35), ?Rings (74) (75) (90)	Omura, S. (1995)
721	Skeleton	XLV–55	S5	–	–	no information, burnt	I, R153	?Spearhead (20), ?Pin (46), ?Awl (35), ?Rings (74) (75) (90)	Omura, S. (1995)
722	Skeleton	XLV–55	S6	–	–	no information, burnt	I, R153	?Spearhead (20), ?Pin (46), ?Awl (35), ?Rings (74) (75) (90)	Omura, S. (1995)
723	Skeleton	XLVIII–52	H.S. 04–03	–	c. 4–5	assemblage (5 infants)	XXVIII, PL28, R317(probably R370)	?Axe frag., ?Pin/Needle	Hunt (2005)
724	Skeleton	XLVIII–52		–	early mid teens	assemblage (2 Juveniles)	XXVIII, PL28, R317(probably R370)	?Axe frag., ?Pin/Needle	Hunt (2005)
725	Skeleton	XLVIII–52		F?	c. 20–25	–	XXVIII, PL28, R317(probably R370)	?Axe frag., ?Pin/Needle	Hunt (2005)
726	Skeleton	XLVIII–52		F?	both order than 25y	sssemblage (2 adults)	XXVIII, PL28, R317(probably R370)	?Axe frag., ?Pin/Needle	Hunt (2005)
727	Skeleton	XLVIII–52	H.S. 04–04	–	c. 3–4	Infant	XXVIII, PL29, R317(probably R370)	?Axe frag., ?Pin/Needle	Hunt (2005)
728	Skeleton	XLVIII–52		–	c. 10–12	Juvenile	XXVIII, PL29, R317(probably R370)	?Axe frag., ?Pin/Needle	Hunt (2005)
729	Skeleton	XLVIII–52	H.S. 04–05	F	c. 18–23	assemblage (2 adults)	XXVIII, PL30, R317(probably R370)	?Axe frag., ?Pin/Needle	Hunt (2005)
730	Skeleton	XLVIII–52		–	c. 1–3	Infant	XXVIII, PL30, R317(probably R370)	?Axe frag., ?Pin/Needle	Hunt (2005)
731	Skeleton	XLVI–54	Individual R	–	–	burnt	Sector 0	Ring (77), ?Spearheads (17) (18), ?Rings	Hunt (2006)
732	Skeleton	XLVI–56	Individual AA	–	–	–	XXI, R208	?Pin (43), ?Pin/Needle	Hunt (2006)

3.3. Description of human skeletons (see Table 3.5)

The Kaman-Kalehöyük excavation has adopted a system whereby human skeletons are numbered according to the room and sector in which they were found. For example, Kaman-Kalehöyük skeleton (S) No. 1 in Room 150 is known as S1 in R150. However, this method was not followed in all excavation seasons. According to Professor Meadow, a specialist in zooarchaeology who worked at Kaman-Kalehöyük, the identification numbers assigned to the bones were based on a skull in the XLVIII-54 and XLIX-54 grids in the 1994 excavation season (Katayama 1998: 205). In contrast, other rules for numbering were used in other excavation areas. For example, the bones found in the XLIX-55 grid in R151 were labelled from A to Z. As a result, the numbering system for human remains is confusing. To get around this complication, I have created a numbering system for this dissertation that simply uses consecutive numbers (Nos 683 to732 in Table 3.5). The main limitation of this part of the study is the limited number of human skeletons for which analyses are available. Accordingly, all the information used here comes from Hunt (2005; 2006), Katayama (1998) and Omura (1995).

Skeleton No. 683: slender male, age 30–40 years. Height max. 1.69m. According to Katayama (1998: 208–9), the body was lying obliquely upward and down on the right side of the body. The skeleton was located on the north bench in R148. There were no bronze artefacts associated with this skeleton.

Skeleton No. 684: juvenile, age 6–8 years, gender uncertain. The person was probably lying on their stomach (Katayama 1998: 208). There were no bronze artefacts associated with this skeleton.

Skeleton No. 685: female, age 30–60 years. The person was probably slender and of short height. The assemblage of bones was found within an area of a circular area 0.3m in diameter (Katayama 1998: 208). Dagger No. 2 and Ring No. 73 were associated with the skeleton. The body was probably lying on the south to east in R148, and she might leave where it fell in an attack in which she carried a dagger for her defense. The ring was a type with overlapping terminals, and was probably an earring. In addition, tweezers 62mm in length (No. 99) were found in a jar near the skeleton. The jar was a red-slipped pot or vessel of uncertain size. The tweezers were accidently found by her because of the attack situation. Hence, it is probable that the tweezers did not belong to this person. It is more likely that the tweezers were used for picking up something contained in the jar.

Skeleton No. 686: this skeleton might have fallen from the upper floor of R150. Male, age 40–60 years, height c. 1.63m, stature medium. His carbonised brain was found within the skull. Scars, probably from a battle injury, were present on two of his ribs. A dagger (No. 4) was found beside the body (Katayama 1998: 208–10). Two rings (No. 65 and 93) were found near the body. Both were probably used as earrings.

Skeleton No. 687: this skeleton was found on the first floor of R150. Infant, gender uncertain. A ring (No. 89), probably an earring, was found with the human

remains, suggesting that even babies wore earrings (Katayama 1998: 210).

Skeleton No. 688: this skeleton was also found on the first floor of R150. Age 0.9 years, gender unknown. No bronze earrings were found. The skeleton was probably placed to overlap Skeleton No. 686 in the XLIX-54 grid (Katayama 1998: 210).

Skeletons No. 689 and No. 690: these skeletons were found together. No. 689 was probably male and aged 20–50 years. No. 690 was female and aged 20–40 years. Her height was c. 1.50m and her stature was slight. Secure associations with both skeletons were a ring (No. 64) and a needle (No. 37). The ring was found c. 0.2m south-east of the skeletal remains. Possible associations were a stamp (No. 97) and an awl (No. 34). The awl, which was found c. 50cm north-west of the skeletons, was, at c. 140mm, quite a lot longer than other awls in the site. However, it may have belonged with any of skeleton Nos 689, 690 or 691 (Katayama 1998: 210–11).

Skeleton No. 691: this skeleton was a that of medium-sized male, age 20–40 years. A ring (No. 55) and an awl (No. 34), which were found c. 1m away from the body, were possible associations (Katayama 1998: 211). The ring might belong to skeleton No. 692 and the awl to skeleton Nos 689 and 690, as mentioned above.

Skeleton No. 692: Katayama (1998: 211–12) indicates that the remains S6 and S7 (numbered by Professor Meadow) belonged to one skeleton. The person was a medium-sized, slender male aged 40–60 years. It was unclear whether the body

was originally deposited on the ground floor or the upper floor because the building had collapsed. However, the skeleton, when excavated, was leaning on the north wall. Thus, the skeleton was probably originally deposited on the ground floor (Katayama 1998: table 1 on 220). The one secure association was a dagger (No. 6) which was found near the body. A possible association was a ring (No. 55) which was unearthed c. 1m away from the skeleton. However, the ring might belong instead to skeleton No. 747.

Skeleton No. 693: this skeleton was probably a male and was aged 30–50 years. Secure associations are two pins (Nos 41 and 45). No. 41 has a semicircular head and No. 45 a square head. It is likely that the person had carried these pins as dress accessories (Katayama 1998: 212).

Skeleton No. 694: Katayama (1998: 212–13) indicates that the remains S9, S10 and S26 belong to one skeleton, a short, slender male aged 25–40 years. He had been trapped under the debris, in particular a beam from the ceiling. Secure associations were a pin (No. 42) and a ring (No. 67). The pin had a six-segmented head. Possible associations were two rings (Nos 72 and 68). No. 72 was used as an earring. Additionally, a stamp (No. 97) may have belonged to this person.

Skeleton No. 695: Katayama (1998: 212–13) argues that S11 and S26 belong to the same skeleton, a juvenile aged 5–7 years of uncertain gender. On excavation, the body was found together with skeleton No. 694. In addition, two rings (Nos 68 and 72) may have belonged to the body.

Skeleton No. 696: Katayama (1998: 213–14) suggests that S12 and S21 belonged

to the same skeleton, a slender person, probably male, of medium height aged 30–50 years. Secure associations were two sickles (Nos 31 and 32). In addition, a pin (No. 40) was also found with the remains and three rings (Nos 58, 63 and 94) were unearthed nearby. A possible association was a stamp (No. 97). Two pins/needles were also found nearby, but these objects were unearthed from levels about 0.5–1.5m lower, and so probably did not belong with the body.

No bronze artefacts were found near the following human skeletons (Nos 697–702). This probably means that that any metal artefacts had been removed after the destruction.

Skeleton No. 697: a female, age 40–60 years (Katayama 1998: 214).

Skeleton No. 698: probably a young adult male, age 14–18 years (Katayama 1998: 214–15). A ring (No. 82) was found beside the remains.

Skeleton No. 699: a medium-sized, slender female, age 20–40 years, height c. 1.61–1.64m. The body was probably lying on its right side (Katayama 1998: 215).

Skeleton No. 700: a slender female, age 40–60 years. She probably lay on the left side of her body (Katayama 1998: 215).

Skeleton No. 701: a medium-sized, probably short male, age 18–30 years (Katayama 1998: 216).

Skeleton No. 702: Katayama (1998: 216) indicates that S19 and S23 belonged to the same skeleton, a juvenile, age 4–6 years, of uncertain gender.

Skeleton No. 703: probably a young adult male, age 12–16 years. A possible association was a dagger (No. 5) which possibly belonged instead to either skeleton No. 703 or No. 705 in R150 (Katayama 1998: 216–17).

Skeleton No. 704: a juvenile, age 5–7 years, of uncertain gender. Secure associations are two rings, one of which, No. 57, was a typical type of earring (Katayama 1998: 217).

Skeleton No. 705: this skeleton was found along with others. However, Katayama (1998: 217) points out that only one complete skeleton has been confirmed from the assemblage. The person was probably an adult male. A possible association was a dagger (No. 5). In addition, two rivets (Nos 15–6) were found near the dagger. However, neither belonged to the dagger, because it already had its own rivet (No. 12).

Skeleton No. 706: a juvenile aged 6–8 years and of uncertain gender (Katayama 1998: 212–13; Hunt 2005: 113).

Skeleton No. 707: probably an infant or a juvenile, although age and gender are unknown (Katayama 1998: 213; Hunt 2005: 114).

The following human skeletons were fragile and there is a lack of information because of the destruction by fire. Possible associations are a sickle (No. 30), a pin (No. 44), rings (Nos 79 and 87) and a pin/needle.

Skeleton No. 708: no information (Hunt 2006: 114).

Skeleton No. 709: juvenile; gender is uncertain (Hunt 2006: 115).

Skeleton No. 710: age 3–5 years, infant; gender is uncertain (Hunt 2006: 115).

Skeleton No. 711: juvenile, older than Skeleton No. 710. Gender is uncertain (Hunt 2006: 115).

Skeleton No. 712: juvenile, age 10–12 years; gender is uncertain (Hunt 2006: 115).

Skeleton Nos 713–716: adult; no other information (Hunt 2006: 115).

The following skeletons were also fragile and there is a lack of age and gender information because of destruction by fire.

Skeleton No. 717: two rings (Nos 78 and 84) were found with this body. They were probably personal items, such as earrings (Omura 1995: 7–8).

Skeleton Nos 718–722: possible association with these skeletons were a spearhead (No. 20), an awl (No. 35), a pin (No. 46) and three rings (Nos 74, 75 and 90). Unfortunately, no more information is available (Omura 1995: 7–8).

The following human skeleton assemblages were fragile and there is a lack of information because of the destruction by fire. Possible associations were an axe fragment and a pin/needle.

Skeleton No. 723: an assemblage of five infants aged 4–5 years; gender unknown

(Hunt 2005: 115–16).

Skeleton No. 724: an assemblage of two juveniles aged in their early–mid teen; gender unknown (Hunt 2005: 115–16).

Skeleton No. 725: probably female, age 20–25 years (Hunt 2005: 115–16).

Skeleton No. 726: an assemblage of two adults. They were probably female, and both of them were older than 25 years (Hunt 2005: 115–16).

Skeleton No. 727: infant, age 3–4 years, gender uncertain (Hunt 2005: 115–16).

Skeleton No. 728: juvenile, age 10–12 years, gender uncertain (Hunt 2005: 115–16).

Skeleton No. 729: an assemblage of two adults. They were female, and both were 18–23 years old (Hunt 2005: 115–16).

Skeleton No. 730: infant, age 1–3 years, gender uncertain (Hunt 2005: 115–16).

Skeleton No. 731: no information is available about age or gender. A secure association is a ring (No. 77) which was probably used as a personal item. Possible associations are two spearheads (Nos 17–18) and other rings (Hunt 2006: 115).

Skeleton No. 732: no information is available about age or gender. Possible associations are a pin (No. 43) and a pin/needle (Hunt 2006: 115).

3.4. Human skeleton positions in rooms

R148 and R150 in Sector XII, part of the building in the west, are respectively rectangular in plan, and each measures about 5 × 7 m. In R148, three skeletons

were found lying on the floor on the north-west side of the room. In R150, a number of skeletons were also found on the floor in the middle of the room, and they lay under burnt logs considered beams used for supporting the floor of the upper storey of the building. As noted above, this is a stratigraphic context described as the lower destruction level, which is concerned with the ground floor of the building. On the other hand, three other skeletons were found on the ash layers covering the burnt logs; they would have probably been inhabitants present in the upper storey when a fire had taken place. This represents a stratigraphic context described as the upper destruction level, concerned with the upper storey of the building (see Fig. 3.4).

Further, in Sector XII, nine skeletons were on the floor of R151 marked as a corridor stretching on the room of R150; and in Sector 0, north of Sector XII, one skeleton was on the floor of another corridor revealed there.

Furthermore, in Sector I (north of Sector 0), where the building in the east was retrieved, there were found six skeletons on the floor of R153 belonging the building complex. Also found in the R208 of the same building complex was a skeleton, which was badly preserved so that the room itself was disturbed by intrusive pits.

In Sector XXVIII, west of Sector XII in which R148 and R150 were confirmed,

many skeletons were recovered from R370. However, all the skeletons were badly preserved owing to the intrusion of a large underground silo dated to the later Hittite Empire period.

R148: one male (No. 683), one juvenile (No. 684) and one female (No. 685) were found inside R148. The male was found on the bench in the south part of the room. A dagger (No. 2) was excavated near the female and may have been brought into the room by her.

R150, upper destruction level: one man (No. 686) and two infants (Nos 687–688) were found in the upper destruction level of R150. The man probably carried a dagger (No. 4).

R150, lower destruction level: this room contained many burnt skeletons, including seven male adults (Nos 689, 691–694, 696, 705), four female adults (Nos 690, 697, 699–700), three male young adults (Nos 698, 701, 703), four juveniles (Nos 695, 702, 704, 706) and one infant/juvenile (No. 707). In total, at least nineteen bodies were found. Four juveniles and one infant/juvenile were found in the middle of the lower floor of R150, while skeleton Nos 692, 694–696 and 702 were found together on the floor to the south-east in the same destruction level (Katayama 1998: 213 and 218). It is not clear whether the rings Nos 59 and 92 belonged to any of the skeletons, because a large timber beam was lying orientated north-west–south-east. A dagger (No. 6) belonged to skeleton No. 692. Another dagger (No. 5) did not definitely belong to either skeleton No. 703 or No.

705. One of the important problems is the question of who the stamp (No. 97) belonged to. There are four possibilities: three male adults (Nos 689, 694 and 696) and a female adult (No. 690).

R151: this area was actually a corridor in Sector XII located outside R150. Four adults, three juveniles, one infant and an unidentified body were found. Unfortunately, the details of these skeletons have not been published. Possible associations were a sickle (No. 30), ring (Nos 79 and 87), a pin with a seven-segmented head (No. 44) and a pin/needle.

R153: six skeletons were found in the area. However, these have not yet been analysed and there is thus no information on the age or gender of these individuals. Skeleton No. 717 was associated with two rings: No. 78, which was an earring for the left ear, and Ring No. 84, which was an earring for the right ear. Thus, the person wore one earring in each ear. Skeleton Nos 718–722 have scant information. Possible associations are a spearhead (No. 20), an awl (No. 35), a pin (No. 46) and rings (Nos 90 and 74–5). These rings were probably worn as earrings.

R370: this room contained many groups of skeletons. According to Hunt (2005), the room was transcribed as Room 317 in her paper. However, the provisional layer numbers indicate that the room was probably Room 370. The assemblages comprised Skeleton Nos 723–30; for example, five female adults, who were aged from c. 18 to over 25 years, seven infants and three juveniles. There are a few possible associations, an artefact that looks like an axe fragment and a pin/needle.

It is unclear to whom these artefacts belonged. One possibility is that a group of mothers had taken refuge with their children in Room 370. However, information is lacking because a large pit destroyed most of these rooms in a later period.

Sector 0: A human skeleton, about which there is no detailed information, was found in part of a corridor between two complex buildings, R148 and R150, and R153 and R208. Skeleton No. 731 had a ring (No. 77) as an earring. In addition, possible associations were spearheads (Nos 17–8), rings, such as (Nos 60–1 and 85), and a pin/needle.

R208: A human skeleton, about which there is no detailed information, was found in the area. Skeleton No. 732 had two possible associations: a pin (No. 43) and a pin/needle.

3.5. Discussion and conclusion

It is worth mentioning that some of the human skeletons found indoors lay with daggers borne, which suggests that there may have been a fight for defending this town against enemies, which is also supported by the fact that a skeleton lay with a spearhead sticking into its trunk. From the point of view of physical anthropology, it is said that the human skeletons found indoors are different from those found outdoors (Omura 2014: 195). If the people who died indoors were inhabitants of the town and if the people who died outdoors were enemies raiding the town, a possibility that many of the inhabitants may have been shut by enemies into rooms of houses, subsequently put into a fire, is suggestible.

However, there is another possibility that they may have fled into houses, though the houses themselves were immediately set on fire by enemies. In fact, many infant and juvenile skeletons were found in the inside of R370 in the west of R148 and R150, while many adult male skeletons were found in the middle of R150 together with bronze weapons. This suggests that the dead bodies of R150 would have been of the men who had gathered in order to protect the children and babies of R150 from enemies, though their defensive actions had resulted in failure by enemies' unexpected attack using fire, which may be a pertinent explanation. Would the enemies have been the forerunners of the Hittites?

Table 3.6. does not show all bronze artefacts; rather it describes the relative distribution of metal finds and human skeleton remains in the IIIc destruction level.

Table 3.6. Possible associations with age and sex categories.

	Weapons	Tools			Personal Items				Others
Ages	Daggers	Sickles	Awls	Needles	Tweezers	Pins	Rings	Stamps	
Adult males	No. 4, (5), 6	No. (30), 31, 32	No. (34)	No. (37)		No. 40, 41, 42, (44), 45	No. (55), 58, 63, 64, 65, 67 (68), (72), (79), (87), 93, 94	No. (97)	(Pin/Needles)
Adult females	No. 2	No. (30)	No. (34)	No. (37)	No. (99)	No. (44)	No. 64, 73, (79), (87)	No. (97)	(Pin/Needles), (an axe frag.)
Young adult males	No. (5)								
Juveniles		No. (30)				No. (44)	No. 57, (68), (72), (79), (87)		(Pin/Needles), (an axe frag.)
Infants		No. (30)				No. (44)	No. (79), (87), 89		(Pin/Needles), (an axe frag.)

Daggers were a possible role as weapons and agricultural tools. In any case, daggers may simply have been general utility equipment. So, daggers were probably used as a weapon by adults of both genders and young adult males. The people who hid in the rooms would possess those daggers. According to Table 3.6, dagger No. 5 was definitely used by either an adult male or a young adult male.

The dagger was probably carried by dead person and it was used for defense. Two sickles belonged to adult males. Sickles were normally an agricultural tool but their presence in the destruction levels suggests that they may have been used as a weapon out of necessity. It is not clear who was using sickle No. 30, although none were associated with juveniles or infants. Therefore, an adult male or female probably used sickle No. 30. The sickle was also used for defence. It is uncertain to whom awl No. 34 belonged or who was using needle No. 37. The needle belonged to an adult male or female. As another possibility, an awl and a needle may belong to the rooms. Tweezers were found near female No. 685, possibly indicating that she used them. Pins were often found with adult males, and it is probably that most adult males wore pins on their clothes. It is uncertain who was using pin No. 44; it was found in the vicinity of an adult male and female, a juvenile and an infant. All possibilities should be considered, because the pin was worn attached to clothing. Two pins had semi-circular heads, and a further two pins had a square head and a six-segmented head respectively (see Section 4.1.11). Adult males and females, juveniles and infants used rings as earrings. Ring No. 94 was possibly used as an earring, but was quite large. The accessories such as pins and rings probably belonged to the bead bodies as personal equipment. An adult male or female, perhaps an administrator at Kaman-Kalehöyük, is associated with stamp No. 97. Pins/needles were found near adult males and females, juveniles and infants. As mentioned above, the pin and needle were possibly used to fasten clothes, and thus, all categories of people may have used them. Additionally,

something like a fragment of an axe was found. Although this object was found near female adults, juveniles and infants it was unlikely to have been used by juveniles or infants. It seems likely, therefore, that the fragment was used by a female adult.

The secure associations with adult males are daggers, sickles, pins, rings and pins/needles. The possible associations with adult males are awls, needles and stamps. It is probable that tweezers were not used by adult males. The secure associations with adult females are daggers and rings, while the possible associations are sickles, awls needles, tweezers, rings, stamps, pins/needles and an axe fragment. Young adult males did not have any secure associations. However, one possible association is dagger No. 5. As seen above, the dagger was also securely associated with to male adults and it is thus likely that males used daggers as weapons. The secure association with juveniles was a ring. The possible associations are a sickle, a pin, rings, pins/needles and an axe fragment. It is doubtful that the sickle belonged to a juvenile because of their young age. The associations with infants are similar to the associations with juveniles. The secure association with infants is a ring which was a similar size to the ring associated with a juvenile (Nos 57 and 89). The possible associations are a sickle, a pin, two rings, pins/needles and an axe fragment. It has already been seen that infants had worn rings as earrings. In fact, it seems likely that people of all ages and genders had worn earrings. However, it is also clear that infants could not use a sickle or,

indeed, an axe.

To sum up, the level IIIc destruction at Kaman-Kalehöyük offers a unique opportunity to study the pattern of artefact associations that arises from metal objects in use. This research has reanalysed the stratigraphy, examined the location of metal objects and human skeletal remains within the destruction site and demonstrated some patterns within this data by age and sex. However, the main limitation is the lack of full data relating to the skeletal material.

Table 3.7. Bronze artefacts from Kaman-Kalehöyük.

Consecutive No.	Fig. No.	Photo No.	Class	Kaman No.	Kaman Year No.	Classify	Length(cm)	Width(cm)	Thickness(cm)	Weight(g)	Type	Context	Period	Remarks	References
1	Fig. 2.1		Dagger	92-085	92000085	Cu/Cu alloy	18.9	3.9	0.5		1b		MBA	No. 685	Japanese Institute of Anatolian Archaeology 2009
2	Fig. 2.4	Photo 1.1	Dagger	94-016	94000133	Cu/Cu alloy	20.6	(1.6)5.65	0.8	134.8	1c	XII, R148	MBA		Japanese Institute of Anatolian Archaeology 2009
3	Fig. 2.2	Photo 1.2	Dagger	94-017	94000135	Cu/Cu alloy	17.6	4.2	0.8	108.4	1b	XII, R149	MBA		Japanese Institute of Anatolian Archaeology 2009
4		Photo 1.3	Dagger	94-018	94000410	Cu/Cu alloy	13.3	3.4	0.4	42.8	1a	XII, R150	MBA	under No. 686	Japanese Institute of Anatolian Archaeology 2009
5		Photo 1.4	Dagger	94-024	94000413	Cu/Cu alloy	21.45	6.05	1.1	161.4	1a	XII, R150	MBA		Japanese Institute of Anatolian Archaeology 2009
6	Fig. 2.3		Dagger	94-178	94000956	Cu/Cu alloy	20.5	4.3	0.7	101.2	1b	XII, R150	MBA	beside No. 692	Japanese Institute of Anatolian Archaeology 2009
7			Dagger	00-333	Y.00000003	Cu/Cu alloy	22.1	4.5	3.5		1a	XXVIII, XLVIII-53, 40	MBA		Japanese Institute of Anatolian Archaeology 2009
8			Rivet of dagger	92-085	92000085	Cu/Cu alloy	1.4	0.45					MBA	3 rivets in a triangle	Japanese Institute of Anatolian Archaeology 2009
9			Rivet of dagger	94-016	94000133	Cu/Cu alloy	1.5	0.7				XII, R148	MBA	4 rivets in a horizontal line	Japanese Institute of Anatolian Archaeology 2009
10			Rivet of dagger	94-017	94000135	Cu/Cu alloy	1.7	0.5				XII, R149	MBA	3 rivets in a triangle	Japanese Institute of Anatolian Archaeology 2009
11			Rivet of dagger	94-018	94000410	Cu/Cu alloy	1.4	0.4				XII, R150	MBA	2 rivets in a horizontal	Japanese Institute of Anatolian Archaeology 2009
12			Rivet of dagger	94-024	94000413	Cu/Cu alloy	3.2	1.4				XII, R150	MBA	2 rivets in a horizontal	Japanese Institute of Anatolian Archaeology 2009
13			Rivet of dagger	94-178	94000956	Cu/Cu alloy	1.3	0.5				XII, R150	MBA	3 rivets in a triangle	Japanese Institute of Anatolian Archaeology 2009
14			Rivet of dagger	00-333	Y.00000003	Cu/Cu alloy	1.4	0.5				XII, R148	MBA	2 rivets in a horizontal	Japanese Institute of Anatolian Archaeology 2009
15		Photo 2.3	Rivet	94-027	94000515	Cu/Cu alloy	2.5	(0.6)1.2		9.9		XII, R150	MBA	difference KL94-024	Japanese Institute of Anatolian Archaeology 2009
16		Photo 2.3	Rivet	94-028	94000516	Cu/Cu alloy	2.95	(0.7)1.4		10.8		XII, R150	MBA	difference KL94-024	Japanese Institute of Anatolian Archaeology 2009
17	Fig. 3.2		Spearhead	94-020	94000298	Cu/Cu alloy	18.7		1.95	97.8	1b	0	MBA	Square: 10.3 Round: 8.4	Japanese Institute of Anatolian Archaeology 2009
18	Fig. 3.1	Photo 2.1	Spearhead	94-021	94000299	Cu/Cu alloy	24.3	2.7	(0.5)1.8	154.6	1a	0	MBA	Joint: 11.8 Point:12.5	Japanese Institute of Anatolian Archaeology 2009
19	Fig. 3.3		Spearhead	94-022	94000411	Cu/Cu alloy	25.15	(3.5)10.5		82.5	1b	XII, R149	MBA	Joint:11.15 Point:14 no rivet	Japanese Institute of Anatolian Archaeology 2009
20	Fig. 3.4	Photo 2.2	Spearhead	94-023	94000412	Cu/Cu alloy	26.9		(1.5)2.2	201.6	1b	I, R153	MBA	Square: 20.4 Round:6.5	Japanese Institute of Anatolian Archaeology 2009
21	Fig. 3.5		Spearhead	06-014	Y.06000044	Cu/Cu alloy	11.9	3.3	0.45		2	V	MBA		Japanese Institute of Anatolian Archaeology 2009
22			Rivet of spearhead	94-020	94000298	Cu/Cu alloy	2.2	0.4				0	MBA	a rivet in a horizontal	Japanese Institute of Anatolian Archaeology 2009
23			Rivet of spearhead	94-021	94000299	Cu/Cu alloy	2.5	0.4				0	MBA	a rivet in a horizontal	Japanese Institute of Anatolian Archaeology 2009
24			Rivet of spearhead	94-023	94000412	Cu/Cu alloy	1.5	0.4				I, R153	MBA	a rivet in a horizontal	Japanese Institute of Anatolian Archaeology 2009
25	Fig. 4.1	Photo 3.1	Sickle①	90-046	90000303	Cu/Cu alloy	12.1	2.9	0.3			III	MBA	piled up three blades, no info. in database	Japanese Institute of Anatolian Archaeology 2009
26	Fig. 4.2	Photo 3.1	Sickle②	90-046	90000303	Cu/Cu alloy	11.6	2.6	0.3			III	MBA	piled up three blades, no info. in database	Japanese Institute of Anatolian Archaeology 2009
27	Fig. 4.3	Photo 3.1	Sickle③	90-046	90000303	Cu/Cu alloy	12.3	2.8	0.3			III	MBA	piled up three blades, no info. in database	Japanese Institute of Anatolian Archaeology 2009
28	Fig. 4.4		Sickle	93-079	93000156	Cu/Cu alloy	11	1.8	0.3			XXIV	MBA		Japanese Institute of Anatolian Archaeology 2009
29	Fig. 4.5		Sickle	94-019	94000202	Cu/Cu alloy	15.1	2.8	0.7				MBA		Japanese Institute of Anatolian Archaeology 2009
30	Fig. 4.6		Sickle	94-116	94000619	Cu/Cu alloy	13.5	1.6	0.2			XII, R151	MBA		Japanese Institute of Anatolian Archaeology 2009
31	Fig. 4.7		Sickle①	94-190	94001030	Cu/Cu alloy	12.7	2.5	0.35	47.6		XII, R150	MBA	piled up two blades, No. 696	Japanese Institute of Anatolian Archaeology 2009
32	Fig. 4.8		Sickle②	94-190	94001030	Cu/Cu alloy	11.7	2.6	0.4	30.6		XII, R150	MBA	piled up two blades, No. 696	Japanese Institute of Anatolian Archaeology 2009
33			Awl	94-095	94000254	Cu/Cu alloy	3.05	0.6		1.4		XII, R150	MBA		Japanese Institute of Anatolian Archaeology 2009
34			Awl	94-192	94001032	Cu/Cu alloy	14.2	1.5	0.85	41.9		XII, R150	MBA		Japanese Institute of Anatolian Archaeology 2009
35			Awl	94-254	94000561	Cu/Cu alloy	3.9	(0.2)0.4		2		I, R153	MBA		Japanese Institute of Anatolian Archaeology 2009
36			Awl		94000268	Cu/Cu alloy	2.5	0.4		2.1		0, 15-b	MBA		Japanese Institute of Anatolian Archaeology 2009
37			Needle		94001244	Cu/Cu alloy	7.6		0.3	1.5		XII, R150	MBA	No. 689/690	Japanese Institute of Anatolian Archaeology 2009
38	Fig. 5.1		Needle		98000470	Cu/Cu alloy	10.3		0.5	3.6			MBA		Japanese Institute of Anatolian Archaeology 2009
39	Fig. 5.2		Pin		96000033	Cu/Cu alloy	7.5	(0.32)0.68		2.8	1	XXIV, 18	MBA	Semicircular	Japanese Institute of Anatolian Archaeology 2009
40	Fig. 5.3		Pin	94-096	94000248	Cu/Cu alloy	11.55	(0.4)1.2		14	1	XII, R150	MBA	Semicircular, No. 696	Japanese Institute of Anatolian Archaeology 2009
41	Fig. 5.4	Photo 4.1	Pin	94-109	94000234	Cu/Cu alloy	7.3	(0.3)0.6		2.8	1	XII, R150	MBA	Semicircular, No. 693	Japanese Institute of Anatolian Archaeology 2009
42	Fig. 5.5		Pin	94-194	94001034	Cu/Cu alloy	13	(0.6)1.6		14.2	4	XII, R150	MBA	6 segmented, No. 694	Japanese Institute of Anatolian Archaeology 2009
43	Fig. 5.6		Pin	96-064	96000536	Cu/Cu alloy	9	(0.3)1.3		6.9	4	XXI, R208	MBA	7 segmented	Japanese Institute of Anatolian Archaeology 2009
44	Fig. 5.7		Pin	94-108	94000617	Cu/Cu alloy	10.5	(0.3)1.2		6.9	4	XII, R151	MBA	7 segmented	Japanese Institute of Anatolian Archaeology 2009
45	Fig. 5.8		Pin	94-213	94000309	Cu/Cu alloy	7.9	(0.2)0.7		3.7	3	XII, R150	MBA	Square, No. 693	Japanese Institute of Anatolian Archaeology 2009

Consecutive No.	Fig. No.	Photo No.	Class	Kaman No.	Kaman Year No.	Classify	Length(cm)	Width(cm)	Thickness(cm)	Weight(g)	Type	Context	Period	Remarks	References
46			Pin		93000215	Cu/Cu alloy	3.6	(0.3)0.5		2	3	I, 21	MBA	Square	Japanese Institute of Anatolian Archaeology 2009
47			Pin		99000969	Cu/Cu alloy	6.8	(0.4)1.2		5.4	2	XXVIII, 24	MBA	Circular	Japanese Institute of Anatolian Archaeology 2009
48			Pin	94-195	94001035	Cu/Cu alloy	9.65	0.3		5.5	2	XII, R150	MBA	Circular	Japanese Institute of Anatolian Archaeology 2009
49			Pin		94000263	Cu/Cu alloy	3.7	(0.5)0.9		2.9	2	XII, R150	MBA	Circular	Japanese Institute of Anatolian Archaeology 2009
50	Fig. 5.9	Photo 4.2	Pin	96-051	96000026	Cu/Cu alloy	10.1	(0.3)0.8		5.5	2	XXIV, 18	MBA	Circular	Japanese Institute of Anatolian Archaeology 2009
51	Fig. 5.10	Photo 4.3	Pin	96-060	96000409	Cu/Cu alloy	9.4	(0.3)0.8		3.5	2	XXI, 23-b	MBA	Circular	Japanese Institute of Anatolian Archaeology 2009
52			Pin		Y.00001262	Cu/Cu alloy	8.6	(0.5)1.4		5.8	2	XXVIII, 24	MBA	Circular	Japanese Institute of Anatolian Archaeology 2009
53			Ring	94-243	94000338	Cu/Cu alloy	1.05	1.5	0.4	0.8		XII, R150	MBA	Triangle	Japanese Institute of Anatolian Archaeology 2009
54			Ring		94000247	Cu/Cu alloy	small:1.2 big:2.0	small:1.5 big:2.0	small:0.3 big:0.38	2.6		XII, R148	MBA	Double-barreled	Japanese Institute of Anatolian Archaeology 2009
55			Ring frag.		94001248	Cu/Cu alloy		2.4	0.3	1		XII, R150	MBA		Japanese Institute of Anatolian Archaeology 2009
56			Ring frags.		94000336	Cu/Cu alloy	big:(remain)1.1	big:1.9	big:0.4	1.2		XII, R150	MBA	Double-barreled	Japanese Institute of Anatolian Archaeology 2009
57	Fig. 6.1	Photo 4.4	Ring	94-026	94000513	Cu/Cu alloy	2.2	2	0.5	2		XII, R150	MBA	straight connect the ends, No. 704	Japanese Institute of Anatolian Archaeology 2009
58			Ring		94000246	Cu/Cu alloy	2.3	2.3	0.3	1.34		XII, R150	MBA	No. 696	Japanese Institute of Anatolian Archaeology 2009
59			Ring		94001050	Cu/Cu alloy	2.4	2.3	0.38	2.1		XII, R150	MBA		Japanese Institute of Anatolian Archaeology 2009
60			Ring		93000567	Cu/Cu alloy	1.8	1.6	0.2	1.8		0, 15	MBA	with bone	Japanese Institute of Anatolian Archaeology 2009
61			Ring		93000557	Cu/Cu alloy	1.7	1.8	0.3	1.7		0, 15	MBA		Japanese Institute of Anatolian Archaeology 2009
62			Ring		94000334	Cu/Cu alloy	1.3	1.7	0.6	1.3		XII, R150	MBA		Japanese Institute of Anatolian Archaeology 2009
63			Ring		94001254	Cu/Cu alloy	1.8	2	0.3	1.1		XII, R150	MBA	No. 696	Japanese Institute of Anatolian Archaeology 2009
64			Ring		94000740	Cu/Cu alloy	2.4	2.4	0.3	2.5		XII, R150	MBA	No. 689/690	Japanese Institute of Anatolian Archaeology 2009
65	Fig. 6.2		Ring	94-233	94000524	Cu/Cu alloy	2.3	2.3	0.4	2.1		XII, R150	MBA	under No. 686	Japanese Institute of Anatolian Archaeology 2009
66	Fig. 6.3		Ring	94-234	94000528	Cu/Cu alloy	1.9	2	0.4	2.6		I, 22	MBA	*in-situ* Wall 1	Japanese Institute of Anatolian Archaeology 2009
67	Fig. 6.4		Ring	94-236	94000741	Cu/Cu alloy	2.9	2.9	0.4	4.6		XII, R150	MBA	No. 694	Japanese Institute of Anatolian Archaeology 2009
68	Fig. 6.5		Ring	94-225	94001048	Cu/Cu alloy	2.2	1.95	0.3	1.9		XII, R150	MBA		Japanese Institute of Anatolian Archaeology 2009
69	Fig. 6.6	Photo 4.5	Ring	94-226	94000249	Cu/Cu alloy	2.3	2.4	0.5	4.5		XII, R150	MBA	in the north wall	Japanese Institute of Anatolian Archaeology 2009
70			Ring		94000239	Cu/Cu alloy	1.7	1.6	0.32	1.1		XII, R150	MBA	overlap connect the ends	Japanese Institute of Anatolian Archaeology 2009
71			Ring		99000966	Cu/Cu alloy	2.1	2.1	0.3	1.3		XXVIII, 24	MBA		Japanese Institute of Anatolian Archaeology 2009
72	Fig. 6.7		Ring	94-237	94001051	Cu/Cu alloy	1.9	2.1	0.3	1.2		XII, R150	MBA		Japanese Institute of Anatolian Archaeology 2009
73	Fig. 6.8		Ring	94-227	94000134	Cu/Cu alloy	2.3	2.4	0.4	3		XII, R148	MBA	No. 685	Japanese Institute of Anatolian Archaeology 2009
74	Fig. 6.9		Ring	94-231	94000208	Cu/Cu alloy	2.1	2.2	0.2	1.6		I, 21	MBA		Japanese Institute of Anatolian Archaeology 2009
75			Ring		94000184	Cu/Cu alloy	2.1	2	0.21	1.5		I, 21	MBA		Japanese Institute of Anatolian Archaeology 2009
76			Ring		94001246	Cu/Cu alloy	1.6	1.5	0.3	0.8		XII, R150	MBA		Japanese Institute of Anatolian Archaeology 2009
77			Ring		94000241	Cu/Cu alloy	1.1	1.1	0.2	0.5		0, 15-b	MBA	Earing, No. 731	Japanese Institute of Anatolian Archaeology 2009
78			Ring		94000749	Cu/Cu alloy	2	1.9	0.2	0.9		I, R153	MBA	left earing in No. 717	Japanese Institute of Anatolian Archaeology 2009
79			Ring		94000743	Cu/Cu alloy	2.05	1.8	0.26	0.8		XII, R151	MBA		Japanese Institute of Anatolian Archaeology 2009
80	Fig. 6.10		Ring		96000187	Cu/Cu alloy	2.2	1.7	0.48	2.2		XXIV, 17	MBA		Japanese Institute of Anatolian Archaeology 2009
81			Ring		94000337	Cu/Cu alloy	2.1	2	0.31	1.7		XII, R150	MBA		Japanese Institute of Anatolian Archaeology 2009
82	Fig. 6.11		Ring	94-238	94001047	Cu/Cu alloy	1.7	1.6	0.3	1.2		XII, R150	MBA	beside No. 698	Japanese Institute of Anatolian Archaeology 2009
83	Fig. 6.12		Ring	94-248	94000523	Cu/Cu alloy	1.7	1.3	0.3	1		XII, R150	MBA		Japanese Institute of Anatolian Archaeology 2009
84	Fig. 6.13		Ring	94-224	94000750	Cu/Cu alloy	1.9	1.8	0.3	1.6		I, R153	MBA	right earing in No. 717	Japanese Institute of Anatolian Archaeology 2009
85			Ring		94000236	Cu/Cu alloy	2.1	1.9	0.2	0.9		0, 15	MBA	overlap not connect the ends	Japanese Institute of Anatolian Archaeology 2009
86	Fig. 6.14	Photo 4.6	Ring	94-228	94000256	Cu/Cu alloy	2.2	2.3	0.4	3.2		XII, R148	MBA		Japanese Institute of Anatolian Archaeology 2009
87	Fig. 7.1		Ring	94-241	94000571	Cu/Cu alloy	3.2	3.2	0.3	3.5		XII, R151	MBA		Japanese Institute of Anatolian Archaeology 2009
88	Fig. 7.2		Ring	94-246	94000245	Cu/Cu alloy	1.9	1.9	0.3	2.3		XII, R150	MBA		Japanese Institute of Anatolian Archaeology 2009
89			Ring		94000341	Cu/Cu alloy	2.1	1.95	0.3	1.3		XII, R150	MBA	Earing in No. 687	Japanese Institute of Anatolian Archaeology 2009
90	Fig. 7.3		Ring	94-235	94000562	Cu/Cu alloy	2.5	2.3	0.3	2.3		I, R153	MBA	in-stu on the stone floor in R153	Japanese Institute of Anatolian Archaeology 2009

Consecutive No.	Fig. No.	Photo No.	Class	Kaman No.	Kaman Year No.	Classify	Length(cm)	Width(cm)	Thickness(cm)	Weight(g)	Type	Context	Period	Remarks	References
91	Fig. 7.4		Ring	94-244	94000242	Cu/Cu alloy	2.3	2	0.2	1.4		XII, R148	MBA		Japanese Institute of Anatolian Archaeology 2009
92	Fig. 7.5		Ring	94-249	94000744	Cu/Cu alloy	2.3	2.2	0.3	1.8		XII, R150	MBA		Japanese Institute of Anatolian Archaeology 2009
93	Fig. 7.6		Ring	94-232	94000527	Cu/Cu alloy	2.3	2.3	0.3	2.3		XII, R150	MBA	beside No. 686	Japanese Institute of Anatolian Archaeology 2009
94	Fig. 7.7		Ring	94-229	94000264	Cu/Cu alloy	3.1	3.2	0.45	6.5		XII, R150	MBA	not connect the ends, No. 696	Japanese Institute of Anatolian Archaeology 2009
95			Ring		94001259	Cu/Cu alloy	1.3	1.5	0.28	0.6		XII, R150	MBA		Japanese Institute of Anatolian Archaeology 2009
96			Ring		96001094	Cu/Cu alloy	2	1.9	0.25	1.5		XXI, 18-a	MBA		Japanese Institute of Anatolian Archaeology 2009
97		Photo 3.2	Stamp	94-008	94000142	Cu/Cu alloy	(surface)2.3	(surface)2.3	(surface)0.3	6.9		XII, R150	MBA	consecutive crescent holes, Height: 2.2cm	Japanese Institute of Anatolian Archaeology 2009
98		Photo 3.3	Stamp	94-009	94000231	Cu/Cu alloy	(surface)2.6	(surface)2.4	(surface)0.2	6.3		XII, R150	MBA	consecutive crescent holes and bird head patterns, Height: 2.4cm	Japanese Institute of Anatolian Archaeology 2009
99			Tweezers		94000235	Cu/Cu alloy	6.2	0.95	0.3	8.6		XII, R148	MBA	in a jar	Japanese Institute of Anatolian Archaeology 2009

Chapter 4: Metalwork typology and comparison with other sites

4.0. Introduction

For my Japanese MA dissertation I presented the metalwork from level IIIc at Kaman-Kalehöyük on an object-by-object basis and discussed the parallels from contemporary sites in central Anatolia, going on to suggest that the material from all such sites was broadly similar. However, at that time I did not compare the material from Anatolia with that from contemporary sites in North Syria/Mesopotamia. Given the extent of the economic connections which have been demonstrated through textual sources (see Chapter 2), this is a logical next step, and will enable us to assess the extent to which the material from central Anatolia was regionally distinct or formed part of a wider stylistic tradition. The second main innovation in the 'typological' part of the present study was the examination of the influence of archaeological context upon the nature of the known metal assemblage, and in particular an assessment of the extent to which metalwork from burials (which may be skewed by the very particular requirements of mortuary activities), which comprises much of the material from Kültepe, for example, provides an accurate impression of the material in use on a day-to-day basis.

As far as the evidence from Anatolia is concerned, comparative analysis is focused upon the contemporary material from the sites of Kültepe, Boğazköy and Alishar Höyük. However, material from contemporary sites elsewhere in Anatolia and from northern Mesopotamia/Syria is considered where it appears useful. More details are shown in Tables 3.7, 4.2, 4.4, 4.6, 4.7 and 4.8. As full typological details of the metal objects from Kaman-Kalehöyük were presented in my Japanese MA dissertation, this information is not repeated here in full, but is given in summary form where necessary.

4.1. Bronze artefacts typology

4.1.1. Daggers

A dagger is defined as an artefact with a short, double-edged blade and a sharp point. In Anatolia the dagger was commonly used as a personal weapon in the early second millennium BC, and sometimes as an agricultural tool, to cut and pierce. The hilt was usually not preserved because it was made of wood or leather, usually attached using metal rivets. Daggers are divided into three main types. In addition, Type 1 is subdivided into Type 1a, 1b and 1c.

4.1.1.1. Type 1a (see Appendix Figs 1.1–2 and Photos 1.3–4)

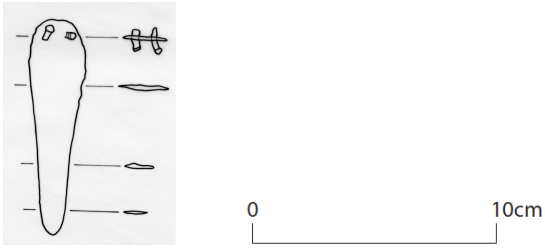


Fig. 4.1. Dagger Type 1a (Consecutive No. 4).
(Source: *Japanese Institute of Anatolian Archaeology* 2009)

Type 1a consists of a flat blade with two rivets which has a rhomboidal or trapezoidal cross section and, sometimes, one or two ridgelines cross section. The blade slightly curves toward the butt; this type does not have a separate blade or butt. Two rivets are set with horizontal lines on the butt of the dagger. Three daggers (Nos 4, 5 and 7; Table 3.2) were found in the destruction level at Kaman-Kalehöyük. The range of sizes is c. 133–221mm in length, c. 34–605mm in width and 4–35mm in thickness. Three daggers (Nos 410–412; Table 4.2) were found in the settlements of Alishar Höyük. The range of size is c. 113–206mm in length and c. 27–42mm in width. In the Boğazköy settlements, three daggers of this type (Nos 261, 263 and 264 Table 4.4.) were also found. The range of sizes is

c. 92–109.4mm in length, c. 27–32mm in width and c. 2–3.5mm in thickness. No. 261 is a fragment of a dagger. Additionally, three daggers of this type (Nos 131–133; Table 4.6) were found in tombs at Kültepe. The range of sizes is c. 92–108mm in length and c. 26–36mm in width. Thus, Type 1a daggers at Kaman-Kalehöyük and Alishar Höyük are larger than those in Boğazköy and Kültepe, which in turn are similar in size to one another even though the context was different. In addition, Type 1a was found widely in early second millennium BC tombs in the Levant (Gernez 2007: III pls 590.1, 2 and 12), suggesting that this is a form that was widespread across the region.

4.1.1.2. Type 1b (see Appendix Figs 2.1–3 and Photo 1.2)

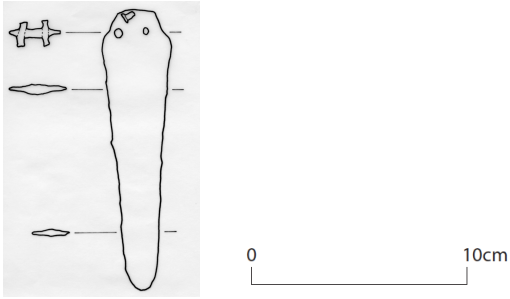


Fig. 4.2. Dagger Type 1b (Consecutive No. 3).

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

Type 1b is very similar to Type 1a in shape and size. However, the blade has three rivets set in a triangular pattern at the triangle-shaped butt. Three artefacts were found in the destruction level of Kaman-Kalehöyük. The range of sizes is c. 176–205mm in length, c. 39–43mm in width and c. 5–7mm in thickness (Nos 1, 3 and 6; Table 3.7). Three daggers were found in the settlements at Alishar Höyük. The range of sizes is c. 160–192mm in length, c. 39–40mm in width and c. 6–30mm in thickness (Nos 409, 414 and 418; Table 4.2). One dagger was found in the settlement at Boğazköy. The size is 81.2mm in length, 24mm in width and 2.2mm in thickness (No. 265; Table 4.4). In addition, three artefacts were found in tombs

at Kültepe. The range of sizes is c. 133–220mm in length and c. 42–43mm in width (Nos 123 and 125–126; Table 4.6). The object at Boğazköy is thus extremely small. Regardless of the context, bronze daggers of Type 1b are in Alishar Höyük, Kaman-Kalehöyük and Kültepe are all a similar shape and size. Examples of this type were also identified in tombs from Cyprus and the Levant (Gernez 2007: III pl. 599.3 and pls 602.1, 4, 8 and 10).

4.1.1.3. Type 1c (see Appendix Fig. 2.4 and Photo 1.1)

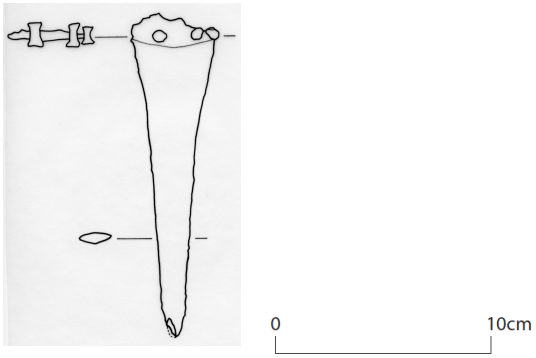


Fig. 4.3. Dagger Type 1c (Consecutive No. 2).

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

Type 1c consists of a long, narrow blade and a rhomboidal cross section. This type has over three rivets in the butt. However, the butt and the blade are integrated. One artefact was found in the destruction level at Kaman-Kalehöyük. It is 206mm in length, 56.5mm in width and 8mm in thickness (No. 2; Table 3.7). One dagger was excavated in the settlement at Alishar Höyük. It is 80mm in length and 30mm in width (No. 415; Table 4.2). This type has not been found in Boğazköy. Additionally, three daggers were found in the settlement, palace and tomb at Kültepe. A dagger fragment in the tomb was c. 80mm in length and c. 27mm in width (No. 124; Table 4.6). One dagger in the settlement is 110mm in length and c. 17mm in width (No. 127; Table 4.6). Another dagger in the palace is 164mm long and 17mm in width (No. 128; Table 4.6). Thus, the dagger in

Kaman-Kalehöyük is bigger than others. The objects were unearthed from three types of context, exemplified by the settlement, palace and tomb in Kültepe. This type was also found in Southern Levant and Cyprus (Gernez 2007: III pl. 605.8 and 9).

4.1.1.4. Type 2

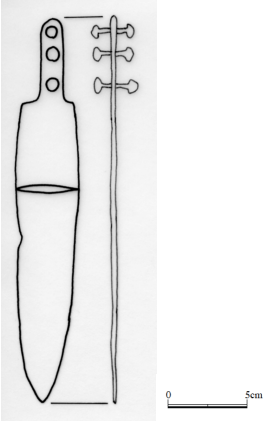


Fig. 4.4. Dagger Type 2 (Consecutive No. 122). (Source: Özgüç 1959: fig. 69 and pl. XLVIII. 4)

Type 2 consists of a long, narrow blade and a long, narrow butt with one or more rivets. It is notable that this type was not found at Kaman-Kalehöyük. One dagger was found in the settlement at Alishar Höyük. It is 115mm in length, 20mm in width and 2.5mm in thickness (No. 408; Table 4.2). One artefact was found in burnt settlement debris at Boğazköy. It is 121.5mm in length, 28.4mm in width and 3.2mm in thickness (No. 262; Table 4.4). Additionally, two daggers were found in tombs at Kültepe. They are c. 89–240mm in length and c. 26–38mm in width (Nos 122 and 130; Table 4.6). One artefact was found in the palace and is 416mm in length and 54mm in width (No. 129; Table 4.6). Therefore, the objects that were found in Alishar Höyükand and Boğazköy were similar in shape. Artefacts from Kültepe are in general larger than other sites' artefacts, although the contexts were different. Moreover, this type was found in tombs in north and

south Mesopotamia, and in Egypt (Gernez 2007: III pl. 560.3 and 4; Philip 2006: 47 and figs 15.1–2 on 48).

4.1.1.5. Type 3

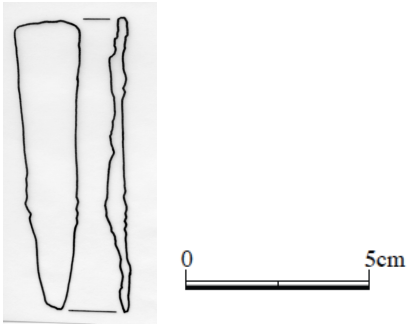


Fig. 4.5. Dagger Type 3 (No. 413). (Source: Schmidt 1932: 153 and fig. 194)

Type 3 consists of a long, narrow blade with no butt or rivet. For this type it is difficult to set up the hilt, so the blade was probably fastened to the hilt with a rope. This type was only found at Alishar Höyük and not at all at Boğazköy, Kaman-Kalehöyük or Kültepe. Two daggers were found in the settlement at Alishar Höyük. The range of sizes is c. 90–95mm in length, c.21–26mm in width and c. 2.5–3mm in thickness (Nos 413 and 416; Table 4.2). Another dagger (fragment) was found in a tomb (No. 417; Table 4.2). It was a mortuary gift (Schmidt 1932: 182). This type of dagger was thus the typical type at Alishar Höyük, and could not be found in other areas of Anatolia or north Mesopotamia in the early second millennium BC.

4.1.2. Spearheads

The spearhead is designed to deliver its force through the point and is thus a throwing or thrusting weapon. It has a pointed tip and a long handle set into a socket. All of the spearheads described here were fixed to the handle by means of a cylindrical socket. This study suggests that socketed types of spearhead were

common in central Anatolia in the second millennium BC. Similar items are socketed points, which are of a similar shape, but shorter than spearhead blades. Four socketed points were found in the settlements at Alishar Höyük (Nos 426–429; Table 4.2). The range of size is c. 42–87mm in length and c. 8–27mm in width. One example was found in the settlement at Boğazköy (No. 268; Table 4.4). It is 136mm in length, 52.8mm in width and 31mm in thickness. In this section spearheads and socketed points are treated separately. Spearheads can be divided into three types: 1, 2 and 3. Type 1 is the socketed type, and this type is divided into two subtypes: Types 1a and 1b.

4.1.2.1. Type 1a (see Appendix Fig. 3.1 and Photo 2.1)

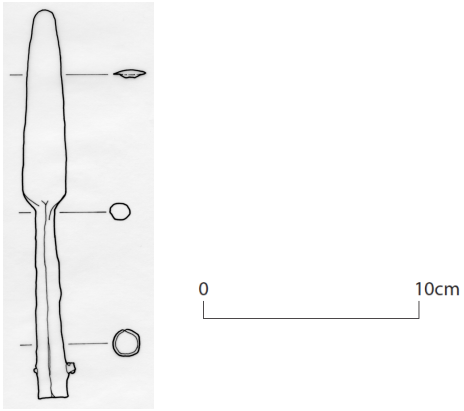


Fig. 4.6. Spearhead Type 1a (No. 18).

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

Type 1a has a cylindrical socket with a rivet and a flat blade with a double-edged, rhomboidal cross section. The socket was used to plug in the hilt which fastened the rivet. This type is cast in a mould, after which it is prepared by hammering. One artefact was found in the destruction level at Kaman-Kalehöyük. It is 243mm in length, 27mm in width and 5–18mm in thickness (No. 18; Table 3.7). One object was found in the settlement at Alishar Höyük (No. 420; Table 4.2). it is 200mm in length, 16mm in width and 2.5mm in thickness. This type has not been

excavated at Boğazköy. In contrast, six spearheads were found in tombs at Kültepe. The range of sizes is c. 176–291m in length and c. 18–32mm in width (Nos 139–142 and 144–145; Table 4.6). All examples of this type were similar in shape and size in central Anatolia. Other examples are known from tombs in the south-east of the Arabian Peninsula, Egypt, northern and southern Levant and north Mesopotamia, making this a widely used spearhead type (Gernez 2007: III pls 431.2–3; pl. 417.1; pls 433.2–3; pl. 434.6; Philip 2006: 59–60 and fig. 23 on 60).

4.1.2.2. Type 1b (see Appendix Figs 3.2–4 and Photo 2.2)

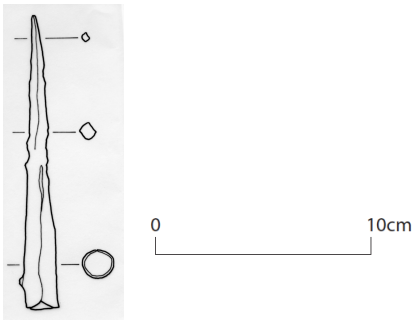


Fig. 4.7. Spearhead Type 1b (No. 17).

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

Type 1b consists of one of the most important types in central Anatolia, because it appeared in a limited area. It has a cylindrical tang to which the hilt was secured, being fastened by a rivet. This type was cast in a mould, after which it was prepared by hammering. Three artefacts were found in the destruction level at Kaman-Kalehöyük. The range of sizes is c. 187–269mm in length, c. 35mm in width and 19.5–22mm in thickness (Nos 17, 19 and 20; Table 3.7). One object was found in the settlement at Alishar Höyük. It is 103mm in length and c. 7mm in width (No. 421; Table 4.2). Another object was found in the settlement at Boğazköy. It is 141mm in length and 13mm in width/thickness (No. 267; Table

4.4). The artefacts in Kaman-Kalehöyük are thus bigger than those found elsewhere. This type has so far been found only in settlement contexts in central Anatolia; although the same type of spearhead has been found in northern and south-eastern Anatolia in the early second millennium BC most contexts were unclear (Gernez 2007: III pls 289–290).

4.1.2.3. Type 2 (see Appendix Fig. 3.5)

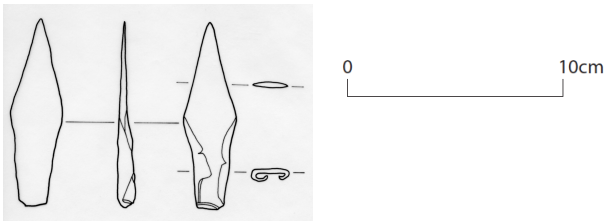


Fig. 4.8. Spearhead Type 2 (No. 21).

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

Type 2 has a flat blade and a curved tang. One artefact was found in the destruction level in Sector V in the north area at Kaman-Kalehöyük, which was contemporary with layers in the early second millennium BC. It is likely that this type is a precursor to those with proper sockets, in that the socket appears to have been 'rolled up' from the flat piece of metal that forms the blade. This example is 119mm in length, 33mm in width and 4.5mm in thickness (No. 21; Table 3.7). Two objects of this type were found in the settlement at Alishar Höyük (Nos 422–423; Table 4.2). No. 422 is 70mm in length and 10mm in width. This type was only found in settlements. Another example that was similar in type was excavated in deposits at Byblos; however, it was quite large, at 440mm in length and 80mm in width (Gernez 2007: III pl. 418.1). This type of spearhead has not been excavated at Boğazköy, Kültepe and North Mesopotamia.

4.1.2.4. Type 3

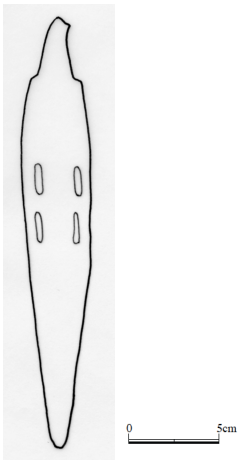


Fig. 4.9. Spearhead Type 3 (No. 266). (Source: Boehmer 1972: 75 and taf. XII.199)

Type 3 consists of a long, narrow leaf-shaped blade with two or more small holes in the middle of the blade and a short, bent tang. This type has not been found in Alishar Höyük or Kaman-Kalehöyük. One artefact was found in the palace at Kültepe. This is the called the 'Anita's spearhead' because it was found in the Palace of Anita (No. 143; Table 4.6.) (Özgüç 1999: 126, pls 107, 1a–c and fig. E.15). It is 291mm in length, included the tang, and the blade is 44mm in width. This spearhead, which was fastened to the hilt with rope through the holes, was a type that had continued in use from the third millennium BC. Another object was found in the burnt debris in Boğazköy (Gernez 2007: III pl. 403.1). It is 235.5mm in length, 40.5mm in width and 4.5mm in thickness (No. 266; Table 4.4). According to the latest excavation research report, one bronze spearhead of this type was found in the palace at Yassı Höyük, near Kaman-Kalehöyük in central Anatolia (No. 736; Table 4.7). However, the size is unknown (*Japanese Institute of Anatolian Archaeology: Yassı Höyük* 2012). This type of spearhead was common in central Anatolia but particularly in other periods –for instance, a few artefacts were found in tombs at Acem Höyük, central Anatolia, dating to 2600–2200 BC (Gernez 2007: III pls 397.1 and 4).

4.1.3. Axes

An axe is classed here as a weapon because it was found in burial contexts, but it was sometimes used as an agricultural tool to chop woods in the early second millennium BC in central Anatolia. An axe is defined as a rectangular blade with a single edge. They are divided into four types. Type 1 is 'the fenestrated axe'; Type 2a is the shaft hole axe; Type 2b is the flat axe; Type 3 is the crescent axe.

4.1.3.1. Type 1

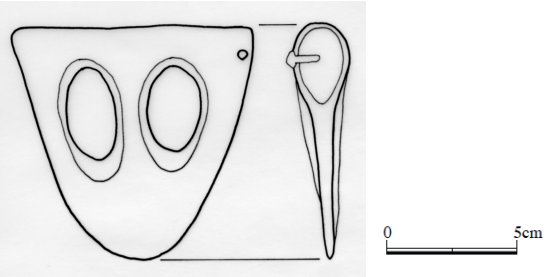


Fig. 4.10. Axe Type 1 (No. 100). (Source: Özgüç 1959: fig. 64 and pl. 49.1)

This type, 'the fenestrated axe', has two fenestrated holes in the blade and an integrated socket and blade (Philip 2006: 33). The form is a type of shaft hole axe. This type has not been found in Alishar Höyük, Boğazköy or Kaman-Kalehöyük. One axe was found in the settlement at Kültepe. Its size is not clear, however, because the scale is not described (No. 119; Table 4.6). In addition, four axes were found in tombs at Kültepe. The range of sizes is c. 52–108mm in length, c. 30–125mm in width and c. 10–22mm in thickness (Nos 100 and 103–105; Table 4.6). No. 103 was imported from north Syria (Özgüç 1959: 109ff). One object was found in the palace at Acem Höyük. It is 117.5mm in length and 57.5mm in width (No. 570; Table 4.7). This type was thus found in central Anatolia, in particular near Kültepe. Axes of this type were widely distributed across the Levant, Egypt

and the Euphrates Valley regions during the Middle Bronze Age I period (Gernez 2007: III pl. 134. 5, pl. 142.5, pl. 143.4, pl. 144.7 and pl. 149.2).

4.1.3.2. Type 2a

Fig. 4.11. Axe Type 2a (No. 101). No scale. (Source: Özgüç 1986: pl. 88.7)

Type 2a consists of an integrated socket with hilt and flat blade. This type has been not excavated at Alishar Höyük, Boğazköy or Kaman-Kalehöyük. Three objects were found in the settlements at Kültepe (Nos 114 and 116–117; Table 4.6). No. 117 is 205mm in length and 78mm in width, which is larger than others found. Five artefacts were found in the tombs at Kültepe (Nos 101–102, 106, 113 and 115; Table 4.6). The range of sizes of Nos 106, 113 and 115 is c. 103–138mm in length, c. 32–60mm in width and c. 23mm in thickness. One object was found in the settlement at Acem Höyük (No. 569; Table 4.7). It is 168m in length and 54mm in width. Two artefacts were found in the palace at Acem Höyük (Nos 567–568; Table 4.7). The range of sizes is c. 128–134mm in length and c. 58–70mm in width. One object was found in the settlement at Tarsus, south Anatolia (No. 613; Table 4.7). There is no information about the scale. Examples are known from the settlement at Tarsus, and also from tombs in north and south Mesopotamia (Gernez 2007: III pls 105.2 and 106.3).

4.1.3.3. Type 2b

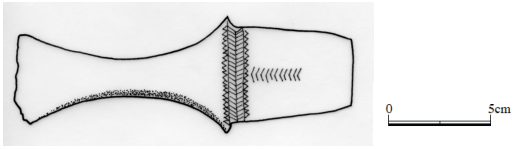


Fig. 4.12. Axe Type 2b (No. 566). (Source: Erkanal 1977: 3 entry 8 and pl. 1.8)

Type 2b, the ‘flat axe’, has two sections: one is thinner with a curving edge and the other is a consistent thickness with a straight edge (Philip 2006: 31–3). This type is also called the ‘trunnion’ or ‘lugged’ axe (Blackwell 2011: 148). The term ‘flat axe’ is used in this research because it is an appropriate descriptive term for the axe. A hilt was bound to the straight edge with a rope. This type has not been found in Alishar Höyük or Kaman-Kalehöyük. One object was found in the tomb at Kültepe (No. 120; Table 4.6). It is a double-edged axe and is 169mm in length and 18.5mm in width. Six artefacts were excavated in the settlements at Kültepe (Nos 108–112 and 118; Table 4.6). The range of sizes across Nos 108–112 is c. 95–155mm in length and c. 24–80mm in width. One object was found in the settlement at Boğazköy. It is 194mm in length, 72.5–82mm in width and 10mm in thickness (No. 269; Table 4.4). One object was found in the settlement at Acem Höyük. However, the size is not clear (No. 571; Table 4.7). One object was also unearthed in the tomb at Acem Höyük. It is 203mm in length and 69mm in width (No. 566; Table 4.7). Additionally, five artefacts were found in the settlements at Beycesultan in western Anatolia (Nos 581–585; Table 4.7). The range of sizes across Nos 583–585 is c. 110–181mm in length and c. 33.5–48.5mm in width. One object was also found in the settlement at Kusura, western Anatolia (No. 596; Table 4.7). Two artefacts were found in the settlements at Tell Achana or Alalakh, southern Anatolia (Nos 620–621; Table 4.7). Three objects were excavated in the settlements at Troy, western Anatolia (Nos 633–635; Table 4.7). Unfortunately,

the scale of these objects from Kusura, Tell Achana, Alalakh or Troy was not described. However, it seems that this type is the characteristic type in Anatolia.

4.1.3.4. Type 3

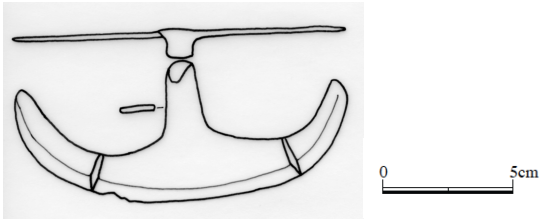


Fig. 4.13. Axe Type 3 (No. 107). (Source: Özgüç 1986: fig. 59 and pl. 128.6)

Type 3 has a crescent-shaped blade part of which is bent to allow the fastening of a hilt. This type has not been found in Alishar Höyük, Boğazköy or Kaman-Kalehöyük. One artefact was found in the tomb at Kültepe. It is 150mm in length and 65mm in width (No. 107; Table 4.6). This type was rare in the second millennium BC in central Anatolia, being found only in Kültepe. Examples are known from Egypt (Gernez 2007: III pls 130. 5–6) and the Levant (Philip 1989: 280–81). However, they were somewhat older than those discussed here, being dated to 2200–1800 BC.

4.1.4. Axe-hammer

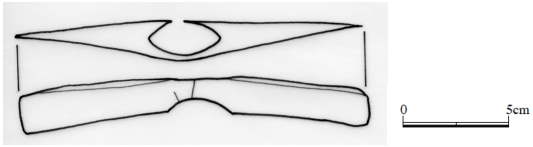


Fig. 4.14. Axe-hammer (No. 121). (Source: Erkanal 1977: pl. 6.66)

The axe-hammer was used both as a weapon and sometimes as an agricultural tool. It consists of two narrow rectangular blades connected by a socket. This type has not been found in Alishar Höyük, Boğazköy or Kaman-Kalehöyük. One object

was found in the tomb at Kültepe. It is 20mm in length, 170mm in width and 20mm in thickness (No. 121; Table 4.6). This type is very limited and has not been found at other sites of the second millennium BC in central Anatolia. Additionally, a few similar types of axe-hammer were found in the southern Levant (Gernez 2007: III pl. 209.2).

4.1.5. Arrowheads

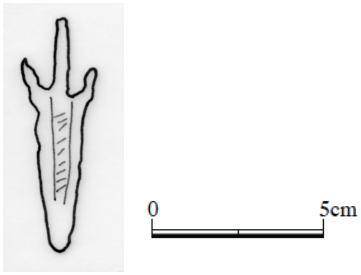


Fig. 4.15. Arrowhead (No. 121). (Source: Özgüç 1986: pl. 129.7)

The arrowhead was used for hunting as tools, and sometimes for battle as weapons. It is triangular in shape, but the point divides into two wings and a tang extends from the centre of the point to be attached to the tip of the arrow. The tang is long and narrow. All arrowheads are similar in shape, so these objects were not divided into subtypes. Arrowheads have not been found in the destruction level at Kaman-Kalehöyük. One example was found in the tomb at Kültepe (No. 147; Table 4.6), however, the scale is not shown. Six artefacts were found in the settlements at Kültepe (Nos 146 and 148–152; Table 4.6). The range of sizes across Nos 148–152 is c. 48–54mm in length and c. 18–24mm in width. Two objects were found in the settlement at Boğazköy (Nos 270–271; Table 4.4), which ranged in size from c. 67–69.5mm in length and c. 18.5–20mm in width. One object was found in the settlement at Alishar Höyük (No. 430; Table 4.2). It is 31mm in length and 18mm in width. The artefacts from Alishar Höyük are

smaller than the others. Arrowheads were mostly found in the settlements in central Anatolia. Only one example is known from Susa in Iran (Gernez 2007: III pl. 477.1).

4.1.6. Tridents

The trident is both a type of weapon and may also have some symbolic or ceremonial significance. It may have two or three points. These objects have a socketed tang. Tridents are divided into two types, 1 and 2.

4.1.6.1. Type 1

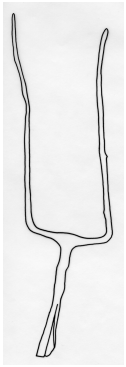


Fig. 4.16. Trident Type 1 (No. 733). No scale. (Source: Özgüç 1986: pl. 128.9)

This type has two points. One trident was found in the settlement at Kültepe (No. 733; Table 4.6). It is 410mm in length and 100mm in width. Examples of this type have not been found at Alishar Höyük, Boğazköy or Kaman-Kalehöyük. However, according to a new excavation report, a bronze trident was found in the palace at Yassı Höyük (No. 737; Table 4.7.) (*Japanese Institute of Anatolian Archaeology: Yassı Höyük* 2012). Examples have not been found in other areas.

4.1.6.2. Type 2

This type has three points. It has not been found in Alishar Höyük, Boğazköy or

Kaman-Kalehöyük. Three examples were found at Kültepe. Two of them were found in the tombs (Nos 154–155), and the context of the other (No. 153) was not clear. The range of sizes is c. 290–702mm in length and c. 101–115mm in width. Other examples were found in the Abi Chemou royal tomb in Byblos, in Lebanon (Gernez 2007: III pls 459.1–3). This suggests that tridents were high status objects. These have not been found elsewhere.

4.1.7. Knives

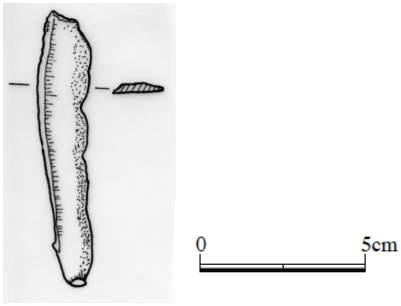


Fig. 4.17. Knife (No. 294). (Source: Boehmer 1972: 78 and taf. XV.254)

Knives were used as tools and consisted of a short, narrow blade with or without tang. Knives were similar function to daggers. Additionally, all knives were similar in shape, so they were not divided into subtypes. Knives have not been found in the destruction level at Kaman-Kalehöyük. Two knives were found in the settlement at Kültepe (Nos 134–135; Table 4.6). No. 134 is 205mm in length, 22mm in width and 4mm in thickness. No information about No. 135 is available. Six objects were found in the settlements at Boğazköy (Nos 294–299; Table 4.4). The range of sizes across Nos 294–298 is c. 59–165mm in length, c. 9–22mm in width and c. 2–3.8mm in thickness. One object was found in the settlements at Alishar Höyük (No. 419; Table 4.2). It is 38mm in length, 6mm in width and 1.3mm in thickness. Twenty-three objects were found in the settlements at Troy (Nos 658–680; Table 4.7). For most accurate dimensions are not available.

However, No. 658 is 150mm in length and 21mm in width. Knives were thus the characteristic tools in Troy. All knives found in Anatolia came from settlements. However, knives were also found in tombs in the Levant, Cyprus and Egypt (Blackwell 2011: 602 and 612; Gernez 2007: III pls 482.2–3, 6 and 8).

4.1.8. Sickles (see Appendix Figs 4.1–8 and Photo 3.1)

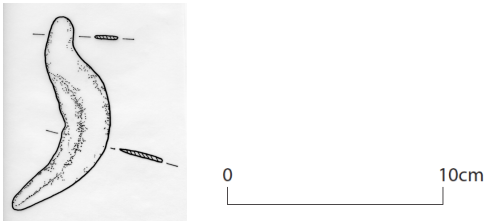


Fig. 4.18. Sickle (No. 25).

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

A sickle is an agricultural tool designed for cutting reeds or grasses, although it could be used as a weapon if necessary. The sickle has a blade shaped in an arc and a bowstring or crescent with a hilt. All sickles are similar in shape, so these objects were not divided into subtypes. Eight objects were found in the destruction level at Kaman-Kalehöyük (Nos 25–32; Table 3.7). The range of sizes is c. 110–135mm in length, c. 16–29mm in width and c. 2–7mm in thickness. One sickle was found in the workshop at Kültepe (No. 138; Table 4.6). However, the scale of this object was not shown. Three objects were found in the settlement at Boğazköy (Nos 300–302; Table 4.4). Nos 301–302 are fragments, so their sizes cannot be described in full. No. 300 is 122mm in length and 24mm in width. Two artefacts were found in the settlement at Alishar Höyük (Nos 468–469; Table 4.2). No. 468 is 126mm in length and 26mm in width. All central Anatolian sickles are similar in size and it is possible that they were made using the same mould type. However, no moulds have been unearthed at the sites. Three sickles, Nos 25–27,

were found on excavation lying over each other in a settlement of Sector III at Kaman-Kalehöyük. Another sickle (No. 32) was also found overlapping No. 31, which was found in the destruction level at Kaman-Kalehöyük. These objects may have been on a shelf or hanging from a hook on a wall within the building. Other examples were found in Cyprus (Blackwell 2011: 602).

4.1.9. Awls

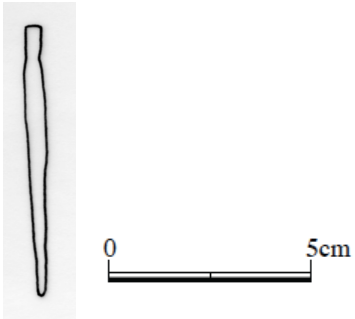


Fig. 4.19. Awl (No. 272). (Source: Boehmer 1972: 115 and taf. XXXIII.937)

Awls are pointed tools designed for perforating materials such as leather or bone. They have a narrow, elongated point with a square cross section. All awls are similar in shape, so these objects were not divided into subtypes. Examples have not been excavated at Kültepe. Four objects were found in the destruction level at Kaman-Kalehöyük (Nos 33–36; Table 3.7). These demonstrated two size ranges. The smaller size is c. 25–39mm in length and c. 4–6mm in width (Nos 33 and 35–36; Table 3.7). The larger size is 142mm in length, 15mm in width and 8.5mm in thickness; this latter awl has a small hole in the middle of one side of the awl (No. 34; Table 3.7). Thirty-six objects were found in the settlements at Alishar Höyük (Nos 431–66; Table 4.2). The range of sizes is c. 27–113mm in length and c. 2–7mm in width/thickness. One example was excavated in the burial/tomb at Alishar Höyük (No. 467; Table 4.2). This object was found with a skeleton (Alishar No. b X31), suggesting that it was a mortuary gift. There is no

information on the size in the excavation report. Seventeen objects were found in the settlements at Boğazköy (Nos 272–288; Table 4.4). The range of sizes is c. 59–125mm in length and c. 3.3–6.5mm in width/thickness. All artefacts were similar in shape and size. It seems that these were relatively common artefacts in central Anatolia. Four artefacts dating to the Middle Bronze Age (MBA) were found in the settlements at Beycesultan (Nos 577–580; Table 4.7), which are c. 44–123mm in length and c. 1.5–4mm in width. Four objects dated in the MBA were also found in the settlements at Kusura (Nos 593–596; Table 4.7); their size is unknown. Single examples dated to the MBA were found in the settlements at Mersin (No. 608; Table 4.7) and Tarsus (No. 611; Table 4.7). Seven objects dated to the MBA were found in the settlement at Troy (Nos 632 and 636–641; Table 4.7), which suggests that awls were a common tool in Anatolia. Other examples were found in settlements in Cyprus, the northern Levant and Egypt (Blackwell 2011: 602 and 655; Philip 2006: 127 and figs 58.2–3 on 130).

4.1.10. Chisels

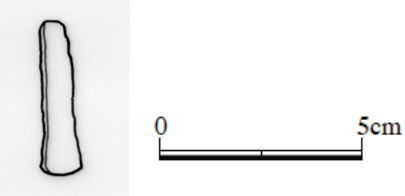


Fig. 4.20. Chisel (No. 289). (Source: Boehmer 1972: 76 and taf. XIII.209)

Chisels are a tool used for woodworking. They consist of a flat rectangular blade. All chisels are similar in shape, so these objects were not divided into subtypes. Examples have not been reported from Alishar Höyük or Kaman-Kalehöyük. Two examples were found in settlement contexts at Kültepe (Nos 136–137; Table 4.6). No. 136 is 60mm in length and 10mm in width. The dimensions of No. 137 were not described. Five examples were found in the settlements at Boğazköy (Nos

289–293; Table 4.4). The range of sizes is c. 56–102mm in length and c. 3.5–7mm in width/thickness. Five artefacts were found in the settlements at Alaca Höyük (Nos 572–576; Table 4.2). The range of sizes is c. 33–118mm in length and c. 4.5–19mm in width. Seven objects dated to the MBA were found in the settlements at Beycesultan (Nos 586–592; Table 4.7). The range of sizes is c. 47–149mm in length and c. 3–8mm in width. Four objects dated to the MBA were found in the settlements at Kusura (Nos 597–600; Table 4.7). The sizes are not clear. Two objects dated to the MBA were found in settlement contexts at Mersin (Nos 609–610; Table 4.7). The range of sizes is c. 88–143mm in length and c. 5–16mm in width. One object was found in the settlement at Tarsus (No. 614; Table 4.7). The size was not given in the report. Sixteen artefacts were found in settlement contexts at Troy (Nos 642–657; Table 4.7). The range of sizes is c. 100–375mm in length and c. 5–27mm in width. Examples come only from settlement contexts in the Anatolian sites. Other examples are known from Egypt and the northern Levant (Blackwell 2011: 656; Philip 2006: 123 and fig. 56.1 on 124).

4.1.11. Pins

Pins have a shaft and head which can take various shapes, such as globular or square. Pins were used as fasteners for clothes, as attachments for stamps/cylinder seals and sometimes as hair ornaments. This research originally divided pins into ten types based on the pinhead shape. Additionally, some German archaeological reports, such as the Boğazköy excavation report (Boehmer 1972) and the research about pins by Klein (1992), defined pins to include needles. However, this research separates pins and needles.

4.1.11.1. Type 1 (see Appendix Figs 5.2–4 and Photo 4.1)

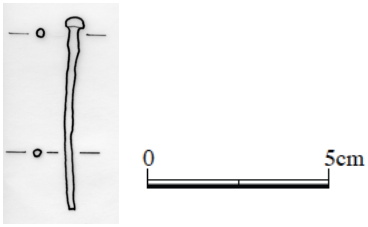


Fig. 4.21. Pin Type 1 (No. 41).

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

Type 1 is a semi-circular pinhead and pin. According to Boehmer (1972: Abb. 33), this type belongs to Type e in Boğazköy IVd. This type has not been excavated at Kültepe. Three objects were found in the destruction level at Kaman-Kalehöyük (Nos 39–41; Table 3.7). The range of sizes is c. 73–115.5mm in overall length and c. 6–12mm in pinhead width. Five objects were found in the settlements at Alishar Höyük (Nos 499–501 and 527–528; Table 4.2). Their lengths range between c. 67mm and 86mm. Two objects were found in the settlements at Boğazköy (Nos 308 and 316; Table 4.4). The range of sizes is c. 80–95mm in overall length and c. 6.2–7mm in pinhead width. Two artefacts were excavated in the temples at Byblos, in the Levant (Klein 1992: 98–9 and taf. 14).

4.1.11.2. Type 2 (see Appendix Figs 5.9–10 and Photos 4.2–3)

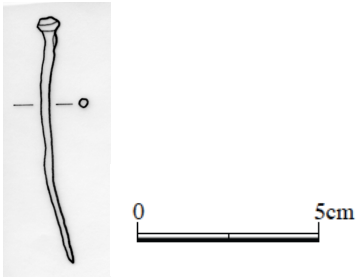


Fig. 4.22. Pin Type 2 (No. 51).

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

Type 2 has a globular-shaped pinhead. This form corresponds to Boehmer's Type a or d at Boğazköy IVd (Boehmer 1972: Abb. 33). This type has not been excavated in Kültepe. Six objects were found in the destruction level at Kaman-Kalehöyük (Nos 47–52; Table 3.7). The range of sizes is c. 37–101mm in overall length and c. 8–14mm in pinhead width. Nine objects were found in the settlement at Alishar Höyük (Nos 490–491, 493–498 and 539; Table 4.2). Their lengths range between c. 53mm and 92mm in. Five objects were found in the settlements at Boğazköy (Nos 303–305, 307 and 348; Table 4.4). The range of sizes is c. 63–102mm in overall length and c. 5.5–8.5mm in pinhead width. This type was often dated to the Early Bronze Age (Klein 1992: 80).

4.1.11.3. Type 3 (see Appendix Fig. 5.8)

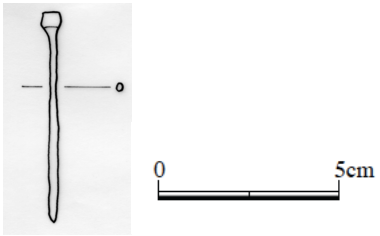


Fig. 4.23. Pin Type 3 (No. 45).

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

Type 3 has a square or polygonal-shaped pinhead. This form corresponds to Type l in Boğazköy IVd (Boehmer 1972: Abb. 33). This type has not been excavated at Kültepe. Two objects were found in the destruction level at Kaman-Kalehöyük (Nos 45–46 on Table 3.7). The range of size is c. 3.6–7.9mm in length and c. 0.5–0.7mm in width of the pinhead. Four artefacts were found in the settlements at Boğazköy (Nos 344, 359 and 387–388 on Table 4.4). The range of size is c. 4.1–10.0mm in length and c. 0.28–0.78mm in width of the pinhead. One object was

found in the settlement at Alishar Höyük (No. 510 on Table 4.2). The size is 7.2mm in length. This type is only a polygonal shaped pinhead. Other examples are known from the temple at Byblos (Klein 1992: 170). Additionally, similar types were often found in c. 1200–1400BC at Boğazköy (Boehmer 1972: Abb. 33).

4.1.11.4. Type 4 (see Appendix Figs 5.5–7)

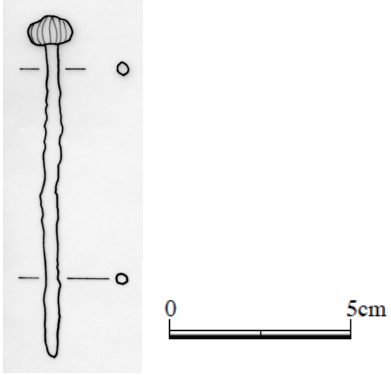


Fig. 4.24. Pin Type 4 (No. 42).

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

Type 4 has a segmented globe pinhead. This form corresponds to Type k in Boğazköy IVd (Boehmer 1972: Abb. 33). Examples may have from six to nine segments. This type includes a segmented pinhead which is flat on the top. This form corresponds to Types g or i in Boğazköy (Boehmer 1972: Abb. 33). Three objects were found in the destruction level at Kaman-Kalehöyük (Nos 42–44; Table 3.7). The range of sizes is c. 90–130mm in overall length and c. 12–16mm in pinhead width of. Nine objects were found in the settlements at Alishar Höyük (Nos 492, 512, 522–526 and 537–538; Table 4.2). The range of sizes is c. 42–91mm in length. One object was found in a burial/tomb at Alishar Höyük (No. 536; Table 4.2). Its length is 85mm in. Twenty-eight artefacts were found in the settlements at Boğazköy (Nos 306, 319–340, 345 and 354–357; Table 4.4). The

range of sizes is c. 64.5–118mm in overall length and c. 0.62–1.8mm in pinhead width. One pin was also found in the courtyard of the palace at Yassı Höyük; however, its size is not clear (No. 738; Table 4.7). Other examples come from Iraq (Klein 1992: 119).

4.1.11.5. Type 5

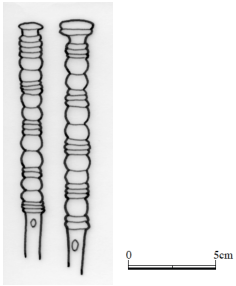


Fig. 4.25. Pin Type 5 (Nos. 173–4). (Source: Özgüç 1959: figs 75–6 and pls L. 2–3)

Type 5 consists of a decorated pin, the so-called toggle pin. This type is without a pinhead and sometimes has an eyelet in the middle of the pin. This type has not been excavated at Alishar Höyük, Boğazköy or Kaman-Kalehöyük. Twelve artefacts were found in the tombs at Kültepe (Nos 173–174, 177–183, 187–188 and 192; Table 4.6). The range of sizes is c. 61–164mm in length. Toggle pins were the typical type in the *Kārum* Kanesh in the early second millennium BC (Özgüç 1986: 32–3). In addition, Nos 187–188 were imported from Syria, because a similar type was excavated in north Syria and the Levant (Özgüç 1986: 72). Examples are also known from the settlements and burials at Tell el-Dab'a; however, these objects were made of copper (Philip 2006: 95–9 and figs 45–46 on 96–7).

In addition, the toggle pin is defined as that with decoration on the top of the pin, with or without a pinhead. Toggle pins with segmented pinheads were excavated

in Kültepe. This pin type demonstrates a high quality of craftsmanship (Özgüç 1986: 72). Eleven objects were found in the tombs at Kültepe (Nos 184–186, 189–191 and 193–197; Table 4.6). Their lengths range between c. 48mm and 177mm. No. 191 was split into two heads. Nos 186, 189 and 196 have an eyelet in the middle of the pin. Nos 184–186 and 189–191 were grave goods in the *Kārum* Kanesh level Ib. No. 189 came from Syria, and similar types of pins were also found in Syria and Palestine (Özgüç 1986: 72). However, the pin moulds have not been found (Özgüç 1986: 73). Additionally, two heads of the segmented type, like No. 191, were similar to examples found in Troy and Byblos. One example was found in a burial at Tell el-Dab'a, Egypt. However, this pin was made of copper (Philip 2006: 95 and fig. 46. 4 on 97).

4.1.11.6. Type 6

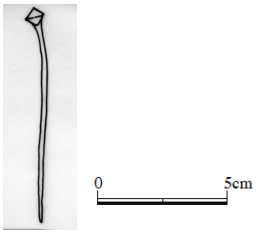


Fig. 4.26. Pin Type 6 (No. 502). (Source: Schmidt 1932: 158 and fig. 200)

Type 6 has a conical-shaped pinhead. It corresponds to Type b or n in Boğazköy IVd (Boehmer 1972: Abb. 33). This type has not been excavated at Kaman-Kalehöyük or Kültepe. Eight objects were found in the settlements at Alishar Höyük (Nos 502–509; Table 4.2). Their lengths range from c. 57mm to 97mm. Fifteen objects were found in the settlements at Boğazköy (Nos 309–314, 318, 346–347, 349–353 and 358; Table 4.4). The range of sizes is c. 52–105mm in length and c. 1–8mm in width. Other examples are known from Ashur in Iraq (Klein 1992: 104).

4.1.11.7. Type 7

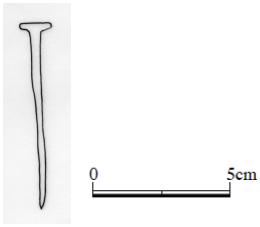


Fig. 4.27. Pin Type 7 (No. 514). (Source: Schmidt 1932: 160 and fig. 201)

Type 7 has a flat pinhead. It corresponds to Type f in Boğazköy IVd (Boehmer 1972: Abb. 33). This type has not been excavated at Kaman-Kalehöyük or Kültepe. Eight objects were found in the settlements at Alishar Höyük (Nos 513–517 and 519–521; Table 4.2). Their lengths range from c. 52mm to 93mm. One object was found in the tomb at Alishar Höyük (No. 518; Table 4.2). It is 105mm in length. Three objects were found in the settlements at Boğazköy (Nos 315, 317 and 343; Table 4.4). The range of sizes is c. 50–105mm in overall length and c. 6–8mm in pinhead width. Other examples are known from the *Kārum* Kanesh levels Ib and II. However, these objects were made of bone and were found in the street by a house (Klein 1992: 167).

4.1.11.8. Type 8

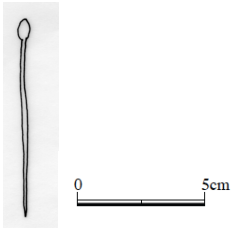


Fig. 4.28. Pin Type 8 (No. 511). (Schmidt 1932: 160 and fig. 201)

Type 8 has a teardrop-shaped pinhead. It corresponds to Type q in Boğazköy IVd

(Boehmer 1972: Abb. 33). This type has not been excavated at Kaman-Kalehöyük or Kültepe. One artefact was found in the settlement at Alishar Höyük (No. 511; Table 4.2). It is 84mm in length. Two artefacts were found in the settlements at Boğazköy (Nos 341–342; Table 4.4). The range of sizes is c. 52–95m–m in overall length and 6.5mm in pinhead width. Examples are known from the Levant and north Syria/Mesopotamia (Klein 1992: 70–71).

4.1.11.9. Type 9

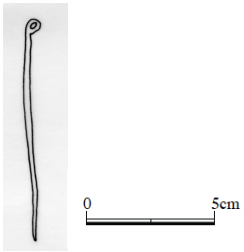


Fig. 4.29. Pin Type 9 (No. 530). (Source: Schmidt 1932: 161 and fig. 202)

Type 9 has a coiled pinhead. It corresponds to Type o in Boğazköy IVd (Boehmer 1972: Abb. 33). This type has not been excavated at Kaman-Kalehöyük or Kültepe. Four objects were found in the settlements at Alishar Höyük (Nos 529–531 and 542; Table 4.2). Their lengths range from c. 54mm to 89mm. One object was found in the settlement at Boğazköy (No. 379; Table 4.4). This object has a flat-coiled head; however, half of the head was missing. Examples come from sites in south and south-eastern Anatolia, such as Mersin, Alalakh, Tarsus and Carchemish, and some were found in Syria, Iraq (Klein 1992: 122–3) and Egypt (Philip 2006: 102 and fig. 46 on 97).

4.1.11.10. Type 10

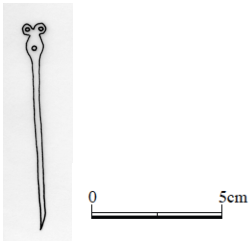


Fig. 4.30. Pin Type 10 (No. 534). (Source: Schmidt 1932: 161 and fig. 202)

Type 10 has a figurine pinhead; representations include lancelets and animals. This type had evolved from Type 9, because it has two coiled heads which resemble an animal (Nos 534–5; Table 4.2). Additionally, this type sometimes has an eyelet near the pinhead (Nos 532 and 534–5; Table 4.2). This is not a type in Boğazköy IV. This type has not been excavated at Boğazköy, Kaman-Kalehöyük or Kültepe. Four objects were found in the settlement at Alishar Höyük (Nos 532–5; Table 4.2). Their lengths range from c. 7.7mm to 10.4mm. Other examples are known from southern Anatolia and the Levant (Klein 1992: 127–8).

4.1.12. Needles (see Appendix Fig. 5.1)

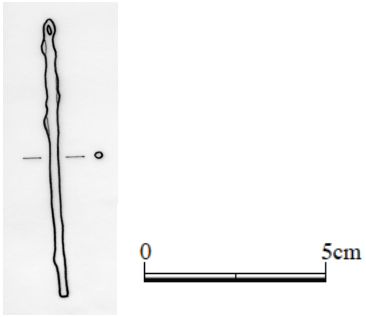


Fig. 4.31. Needle (No. 38).

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

A needle may have or lack an eyelet on the top of the head; however, it does not have a pinhead. All needles are similar in shape, so these objects were not divided

into subtypes. Needles have not been excavated at Kültepe. However, most objects found were a fragment of a needle/pin and, consequently, it is difficult to determine whether or not objects were needles or pins. In fact, a number of pins/needles were excavated in the destruction level at Kaman-Kalehöyük. However, these objects are not classified. Two certain objects were found in the destruction level at Kaman-Kalehöyük (Nos 37–8; Table 3.7). The lengths range from c. 76mm to 103mm and from c. 3mm to 5mm in width/thickness. Twelve examples were found in the settlements at Alishar Höyük (Nos 476–87; Table 4.2). The lengths range from c. 4.8mm to 9.8mm. Thirty-four artefacts were found in the settlements at Boğazköy (Nos 360–78, 380–86 and 389–96; Table 4.4). The lengths range from c. 48.5mm to 122mm. Examples are also known from Syria and Iraq (Klein 1992: 30–1).

4.1.13. Rings

Rings consist of a copper alloying wire made into a circle. They were used as a kind of accessory. They were sometimes excavated with stones as finger rings. Rings are divided into two subtypes by size.

4.1.13.1 Small rings (see Appendix Figs 6–7 and Photos 4.4–6)

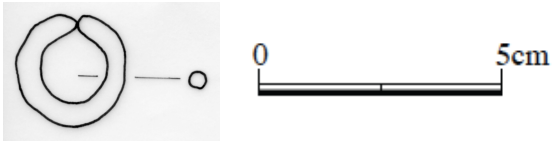


Fig. 4.32. Small ring (No. 65).

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

A small ring is defined as a small, circular bronze object, and they tend to be of a similar type. However, here we focus on their size and intended use. Rings were used for personal ornament as finger-rings, earrings and hair rings. In addition,

small rings could be connected to make a necklace, although these were rarely found. However, two connected rings were found in Kaman-Kalehöyük (Nos 54 and 56; Table 3.7). Moreover, three objects were found with skeletons (Nos 78, 84 and 89; Table 3.7), near the head. It is assumed that Nos 78 and 84 were worn as right and left earrings. However, the poor condition of the skeletal remains precludes an assessment of their age and sex. No. 89 was found with an infant. Another was found on a body's finger (No. 60; Table 3.7), suggesting use as a finger-ring. Forty-four rings were found in the destruction level at Kaman-Kalehöyük (Nos 53–96; Table 3.7). The range of sizes is c. 10.5–32mm in length, c. 13–32mm in width and c. 2–4.8mm in thickness. Eight examples were found in the settlements at Alishar Höyük (Nos 549–550 and 552–557; Table 4.2). The range of sizes is c. 12–29mm in length and c. 12–29mm in width. Four artefacts were found in the tombs/burials at Alishar Höyük (Nos 547–548, 551 and 558; Table 4.2). The range of sizes is c. 13–21mm in length and c. 14–22mm in width. All small rings in burial sites or tombs were mortuary gifts. Nos 548 and 551 were used as earrings. Additionally, two examples were found in the settlements at Boğazköy (Nos 402–403; Table 4.4). The range of sizes is c. 17.5–32mm in length and c. 2.5–3mm in width/thickness. Four artefacts were found in the tombs at Kültepe (Nos 198–201 on Table 4.6). The diameters range from c. 14mm to 23mm in. A few bronze objects were gold-plated (Nos 200–201; Table 4.6). Other examples are known from Tell el-Dab'a (Philip 2006: 114–6 and fig. 52 on 115). These bronze objects were excavated in the settlements rather than the tombs (Philip 2006: 116).

4.1.13.2. Bracelets or anklets

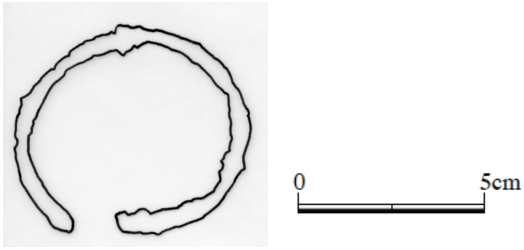


Fig. 4.33. Bracelet or anklet (No. 202). (Source: Özgüç 1986: pl. 69.4)

Bracelets or anklets are thick rings of circular cross-section, and the average size is over 60mm in diameter. These items have not been excavated in Alishar Höyük and Kaman-Kalehöyük. Four objects were found in Kültepe (Nos 202–205; Table 4.6). Nos 203–204 were found in the tombs at Kültepe; however, the contexts of the others are unknown. The range of sizes is c. 58–64mm in diameter. These objects were covered with a thin silver sheet (Nos 202–204; Table 4.6). In addition, one object has animal decorations on both edges (No. 205; Table 4.6) (Özgüç 1986: 30–31). This type was also excavated in Boğazköy. However, the context was contemporary with the Hittite Empire period and thus the object does not belong to the *Kārum* Kanesh levels Ib or II (Özgüç 1986: 77). Furthermore, five objects were found in the settlements at Boğazköy (Nos 397–401; Table 4.4). The range of sizes is c. 34.5–57.5mm in diameter and c. 2.5–6mm in thickness.

4.1.14. Stamps (see Appendix Photos 3.2–3)

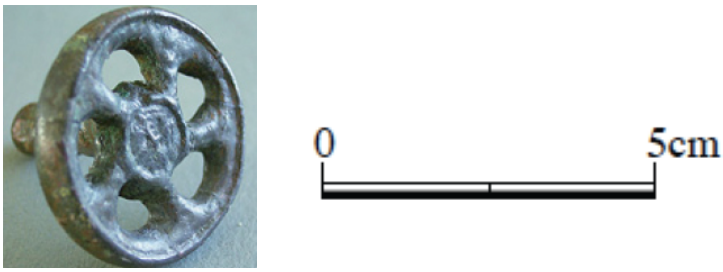


Fig. 4.34. Stamp (No. 97).

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

Stamps consist of a seal attached to a handle made of bronze. They were used as confirmation seals. However, it is not clear what kind of people used them. No examples have been excavated in Boğazköy and Kültepe. Two objects were found in the destruction level at Kaman- Kalehöyük (Nos 97–98; Table 3.7). The range of sizes is c. 23–26mm in diameter, c. 2–3mm in thickness and c. 22–24mm high. The seals of No. 97 shows consecutive crescent holes pattern (Omura 1997: 120–22). No. 98 shows consecutive crescent holes with bird head patterns; however, half of the seal is missing (Çelik 2006: figs 4–8 on 280). One terracotta stamp (No. 734 on Table 4.7.) and a clay bulla (Nos 735; Table 4.7.) were found in the *Kārum* Kanesh. No. 734 is contemporary with the *Kārum* Kanesh level II (Özgüç 1968: 43–44) and No. 735 is contemporary with the Old Hittite period (Özgüç 1968: 45). The patterns on these seals show the consecutive head of birds pattern which were a common pattern in this site (Özgüç 1968: pls XXXVII, Ia–b and 5). Two stamps were found in the settlements at Alishar Höyük (Nos 474–475; Table 4.2). No. 474 consists of a square seal face, partly missing, and a handle. The pattern is 'eight parallel lines crossed by others at right angle' (Schmidt 1932: 148). It is 22mm in length, 14.5mm in width and 22mm in height. No. 475 consists of six leaves, partly missing, with a hole in the handle. Its pattern is 'two concentric circles in the centre with six loops radiating from the outer one' (Schmidt 1932: 149). It is 18mm in length, 18mm in width and 17mm in height. Collon (1990: 48) points out that the pattern of cylindrical seals developed into the pattern of the Anatolian stamp styles during the period of the *Kārum* Kanesh level II; therefore, it seems that, during this development, each region of Anatolia used a different pattern.

4.1.15. Tweezers

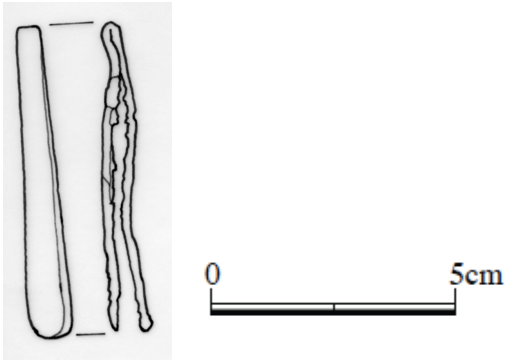


Fig. 4.35. Tweezers (No. 405). (Source: Boehmer 1972: 118 and taf. XXXIV.1006)

Tweezers consist of two flat and narrow bronze plates joined at one end and set close together. They were used to pick up small items. Examples have not been excavated at Alishar Höyük, but two were found in Kültepe. However, it is not possible to include these objects because of a lack of information. One object was found in the destruction level at Kaman-Kalehöyük (No. 99; Table 3.7). It is 62mm in length, 9.5mm in width and 3mm in thickness. Another object was found in the settlement at Boğazköy (No. 405; Table 4.4). It is 67.2mm in length and 5.2–8mm in width. It is noteworthy that both tweezers were found inside a ceramic jar or pot, suggesting that they were used for extracting something from inside the jar or pot. This is unusual, as many examples of tweezers elsewhere come from grave contexts, where they appear to have served as a piece of personal grooming equipment (Philip 2006: 109 and 161–2).

4.1.16. Other bronze tools

It is notable that seven vessels (Nos 156–62; Table 4.6), one bowl (No. 164; Table 4.6), one pan (No. 168; Table 4.6), one bucket (No. 169; Table 4.6.) and three spools (Nos 170–2; Table 4.6.) were found in the tombs in Kültepe. The range of sizes of the spools is c. 88–108mm in length and c. 50–86mm in width. Spools

were not found in other sites in Anatolia, suggesting that they were brought from Syria/Mesopotamia by merchants and that metalworking smiths had cast these items at Kültepe (Özgüç 1986: 75–6). All vessels and spool No. 172 were shown to be grave goods. One bowl (No. 165; Table 4.6), a cup (No. 166; Table 4.6) and a goblet (No. 167; Table 4.6) were found in the palace at Kültepe. In addition, two saws with teeth were found in the settlements at Troy (Nos 681–2; Table 4.7). The range of sizes is c. 211–275mm in length and c. 50–55mm in width. These objects are distinctive items and there is no record of their discovery at Kaman-Kalehöyük.

4.1.17. Moulds

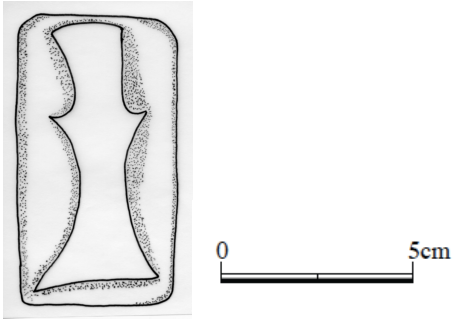


Fig. 4.36. Axe mould (No. 213). (Source: Özgüç 1986: pl. 79.10a)

Moulds are defined as forms into which liquid metal is poured in order to cast an object of specified design. There are two types: the open mould – actually used with a wooden lid – and the 'bivalve mould', which is in two pieces (Massimino 2013: 89). The latter was used for making axes and other tools of complex shape. Most moulds were made of stones such as steatite, while some were made of baked clay. One example was found in the settlement context at Alishar Höyük (No. 565; Table 4.2). It is 64mm in length, 39mm in width and made of a grayish-green serpentine which had three mould surfaces for two bars and a round piece (Schmidt 1932: 170). Two examples were found in the settlement contexts

at Boğazköy (Nos 406–7; Table 4.4). The range of sizes is c. 51–78mm in length, c. 37–54mm in width and c. 16–17mm in thickness. No. 406, which was made of a black-brown limestone, was a one-sided open mould for a figurine. No. 407, which was made of light grey stone, was an open mould and had mould surfaces for two bars (Boehmer 1972: 217). Nine objects were found in the workshops at Hirbemerdon Tepe (Nos 623–31; Table 4.7). Nos 624, 628–629 and 631 were made of baked clay. The range of sizes is c. 95–320mm in length, c. 91–110mm in width and c. 40–75mm in height. No. 624 consists of a single mould probably for a flat axe. No. 628 consists of one piece of a multiple mould perhaps for a bar, sickle, chisel and tip. No. 629 also consists of one piece of a multiple mould, although a clear surface is not apparent. No. 631 consists of one piece of a multiple mould for blades. Nos 623, 625–627 and 630 were made of stone. The range of sizes is c. 100–240mm in length, c. 72–190mm in width and c. 25–170mm in height. No. 623 consists of a bivalve single steatite mould for a shaft hole axe. No. 625 consists of one piece of a multiple sandstone mould for bars. No. 626 also consists of one piece of a multiple sandstone mould, perhaps for a sickle and tool. No. 627 consists of one piece of a multiple limestone mould probably for an awl, bar, sickle and flat axe. No. 630 consists of one piece of a multiple basalt mould for a sickle and flat axe (Massimino 2013: plates I–IX). Forty-nine objects were found in the workshops or settlements at Kültepe (Nos 212–60; Table 4.6). However, information relating to, for example, the material in which the mould was made was lacking. These moulds were divided into two sizes: moulds over 100mm in length and those below. The range of sizes of the former is c. 105–290mm in length and c. 44.5–175mm in width (Nos 214–5, 217, 223–7, 230–3, 236–9, 242, 244, 246–7 and 260; Table 4.6). The range of sizes of the latter is c. 31–99mm in length and c. 17.5–96mm in width (Nos 213, 216, 218, 220–2, 228–9, 234–5, 240, 245, 248–56 and 258–9; Table 4.6). These moulds

made fenestrated axes, shaft hole axes, flat axes, chisels, blades, bars and ornaments (Müller-Karpe 1994; Özgüç 1986). Additionally, six moulds were found in the settlements at Lidar (Nos 602–7; Table 4.7). These objects also lacked information about the material of manufacture. The range of sizes is c. 86–249mm in length and c. 100–195mm in width. These moulds made weapons, such as shaft hole axes, and bar ingots (Müller-Karpe 1994: 197–8, 202 and 210). Five moulds were found in the settlement contexts at Tarsus (Nos 615–9; Table 4.7). The range of sizes is c. 81–236mm in length and c. 68–160mm in width. The moulds were used to make daggers and chisels (Blackwell 2011: 649; Müller-Karpe 1994: 200 and 202). One object was found in the temple at Tell Achana or Alalakh (No. 622; Table 4.7). It is 33mm in length and 23.5mm in width and was used to make a small shaft hole axe (Müller-Karpe 1994: 218). It is smaller than other moulds for shaft hole axes. It would seem that moulds had been stored in the temple. There are no examples of moulds from Kaman-Kalehöyük, but examples are known from Tell el-Dab'a. All limestone moulds are in one piece (Philip 2006: 184). It also corresponds to Anatolia. In addition, stone moulds could be reused, but clay moulds could be used only once (Philip 2006: 192).

4.2. Bronze artefacts at individual sites in central Anatolia

4.2.1. Alishar Höyük

The problem with this site is that the stratigraphy is ambiguous. It is necessary, therefore, to compare with care with other sites.

Table 4.1. Bronze artefacts from Alishar Höyük.

	Weapons					Tools		Personal items					Others
Context	Daggers	Knives	Spearheads	Socketed points	Arrowheads	Awls	Sickles	Stamps	Needles	Pins	Bracelets	Rings	
Settlements	10	1	4	4	1	38	2	2	12	50	3	8	Mould, Spatula, Rivets
Burials	1	0	0	0	0	1	0	0	0	3	0	4	

As can be seen in Table 4.1, a number of bronze objects, such as weapons, tools, and personal items, were found in settlement contexts. There are five types of dagger: 1a, 1b, 1c, 2 and 3. Most daggers were found in the settlements and only one dagger of Type 3 was found in a burial/tomb. Spearheads are of three types: 1a, 1b and 2. All those found came from settlement contexts. Pins are of nine types: 1–4 and 6–10. Most were found in settlement contexts. However, one Type 4 object and one Type 7 object were found in burial sites or tombs. Unfortunately, a few pins lack information about their bronze type. Awls and pins tended to be found in burial contexts. Additionally, four socketed points and a spatula were found in settlement contexts. These results suggest that, although there were many burial sites or tombs, these tended not to be rich tombs. Most bronze objects were found in the settlements at Alishar Höyük (see Table 4.2).

Table 4.2. List of bronze artefacts from Alishar Höyük.

Consecutive No.	Class	Alishar No.	Classify	Length(cm)	Width(cm)	Thickness(cm)	Type	Context	Phase	Period	Remarks	Reference
408	Dagger	b2042	Cu/Cu alloy	11.5	2	0.25	2	Settlement	Stratum II	MBA	a lance head or a small dagger. Two rivets in position. Double edged. Diamond shaped cross-section, Type 4.	Schmidt 1932 p.153. Fig.192
409	Dagger	b1361	Cu/Cu alloy	16	3.9	0.6	1b	Settlement	Stratum II	MBA	Double edged. rhomboidal cross-section. 3 rivet holes. No shape point.	Schmidt 1932 p.153. Fig.194
410	Dagger	b1314	Cu/Cu alloy	20.6	4.2	0.5	1a	Settlement	Stratum II	MBA	2 rivet holes. Similar to No.b1361, but longer than No.b1361.	Schmidt 1932 p.153. Fig.193
411	Dagger	b1536	Cu/Cu alloy	13.6	3		1a	Settlement	Stratum II	MBA	2 rivet holes. Similar to No.b1361 and b1314.	Schmidt 1932 p.153. Fig.193
412	Dagger	b2496	Cu/Cu alloy	11.3	2.7		1a	Settlement	Stratum II	MBA	similar to No.b1361 and b1314. slightly smaller than No.b1361. curved point.	Schmidt 1932 p.153. Fig.194
413	Dagger	b2072	Cu/Cu alloy	9	2.1	0.25	3	Settlement	Stratum II	MBA	smilar to No.b1361 and b1314.	Schmidt 1932 p.153. Fig.194
414	Dagger	b3	Cu/Cu alloy	19.2	4	3	1b	Settlement	Stratum II	MBA	in L6, with Alishar II bowl, rhomboidal cross-section, 3 rivet holes	Schmidt 1932 p.208, Fig.270
415	Dagger frag.	b2091	Cu/Cu alloy	8	3		1c	Settlement	Stratum II	MBA	4 rivet holes	Schmidt 1932 p.153. Fig.194
416	Dagger frag.	b1410	Cu/Cu alloy	9.5	2.6	0.3	3	Settlement	Stratum II	MBA	blunt point	Schmidt 1932 p.154, Fig.194
417	Dagger frag.	b2651	Cu/Cu alloy			0.3	3	Burial	Stratum II	MBA	with Skeleton b X31, mortuary gift in Plot FF10	Schmidt 1932 p.155, Fig.194, p.182, Fig.235
418	Dagger	b3	Cu/Cu alloy	19.2	4	0.3	1b	Settlement	Stratum II	MBA	found Level 6(early Alişar III),but Alişar II blade. Double-edged, rhomboidal cross-section, 3 rivet holes. Curved point.	Schmidt 1932 p.208, Fig.270
419	Knife frag.	b1322	Cu/Cu alloy	3.8	0.6	0.13		Settlement	Stratum II	MBA	small, double edged, rhomboidal cross-section	Schmidt 1932 p.154, Fig.194
420	Spearhead	b1228	Cu/Cu alloy	20	1.6	0.25	1a	Settlement	Stratum II	MBA	Double edged, rhomboidal cross-section. A long shaft with rectangular cross-section: 0.25cmx0.75cm	Schmidt 1932 p.153. Fig.192
421	Spearhead	b165	Cu/Cu alloy	10.3	0.7		1b	Settlement	Stratum II	MBA	a rolled tube with pointed end	Schmidt 1932 p.153. Fig.192
422	Spearhead	b1628	Cu/Cu alloy	7	1		2	Settlement	Stratum II	MBA	a flattened and rolled upper end, shaft section 0.7cmx0.8cm	Schmidt 1932 p.153. Fig.192
423	Spearhead	b1495	Cu/Cu alloy				2	Settlement	Stratum II	MBA	the same type of No. b1628, but scale is twice. No rivet hole. Section 0.4cmx0.6cm. No illustrated.	Schmidt 1932 p.151
426	Socketed point	b2062	Cu/Cu alloy	8.7	2.7			Settlement	Stratum II	MBA	2 rivet holes, blade: spatulate, flaring	Schmidt 1932 p.154, Fig.195
427	Socketed point	b2118	Cu/Cu alloy	5.3	2			Settlement	Stratum II	MBA	2 rivet holes.	Schmidt 1932 p.154, Fig.195
428	Socketed point	b2766	Cu/Cu alloy	8.7	0.9			Settlement	Stratum II	MBA	remained 1 rivet. Socket with a chip of wood	Schmidt 1932 p.154, Fig.195
429	Socketed point	b2152	Cu/Cu alloy	4.2	0.8			Settlement	Stratum II	MBA	smaller one. Remained 1 rivet.	Schmidt 1932 p.154, Fig.195
430	Arrowhead	b2151	Cu/Cu alloy	3.1	1.8			Settlement	Stratum II	MBA	square tang.	Schmidt 1932 p.153. Fig.192
424	Awl	a1009	Cu/Cu alloy					Settlement	Stratum III		in L6 of Plot L14	Schmidt 1932 p.208, Fig.270
425	Awl	a1039	Cu/Cu alloy					Settlement	Stratum III		in L6 of Plot L14, Period IV under citadel wall	Schmidt 1932 p.208, Fig.270
431	Awl	a940	Cu/Cu alloy					Settlement	Stratum III			Schmidt 1932 p.208, Fig.270
432	Awl	b2797	Cu/Cu alloy	4.8		0.2×0.35		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
433	Awl	b1031	Cu/Cu alloy	4.8		0.4×0.45		Settlement	Stratum II	MBA		Schmidt 1932 p.152. Fig.191
434	Awl	b1356	Cu/Cu alloy	7.35		0.4×0.45		Settlement	Stratum II	MBA		Schmidt 1932 p.152. Fig.191
435	Awl	b2491	Cu/Cu alloy	6.2		0.55×0.65		Settlement	Stratum II	MBA		Schmidt 1932 p.152. Fig.191
436	Awl	b1190	Cu/Cu alloy	5.4		0.35		Settlement	Stratum II	MBA	in point, round shape diameter	Schmidt 1932 p.152. Fig.191
437	Awl	b1857	Cu/Cu alloy	13		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
438	Awl	b1897	Cu/Cu alloy	11.3		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
439	Awl	b1480	Cu/Cu alloy	9.8		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
440	Awl	b1940	Cu/Cu alloy	9.8		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
441	Awl	b773	Cu/Cu alloy	8.1		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
442	Awl	b1170	Cu/Cu alloy	8		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
443	Awl	b2265	Cu/Cu alloy	7.7		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152. Fig.191
444	Awl	b1898	Cu/Cu alloy	8		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
445	Awl	b1880	Cu/Cu alloy	8		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
446	Awl	b1975	Cu/Cu alloy	7.5		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
447	Awl	b2583	Cu/Cu alloy	7.7		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
448	Awl	b2432	Cu/Cu alloy	7.5		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
449	Awl	b1531	Cu/Cu alloy	7.2		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
450	Awl	b2335	Cu/Cu alloy	6.9		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
451	Awl	b1883	Cu/Cu alloy	7		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
452	Awl	b1644	Cu/Cu alloy	6.5		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191

Consecutive No.	Class	Alishar No.	Classify	Length(cm)	Width(cm)	Thickness(cm)	Type	Context	Phase	Period	Remarks	Reference
453	Awl	b2021	Cu/Cu alloy	3.5		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
454	Awl	b1233	Cu/Cu alloy	3.6		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
455	Awl	b2203	Cu/Cu alloy	2.7		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152. Fig.191
456	Awl	b1219	Cu/Cu alloy	5.1		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152, Fig.191
457	Awl	b2266	Cu/Cu alloy	5.1		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152. Fig.191
458	Awl	b1355	Cu/Cu alloy	5.1		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152. Fig.191
459	Awl	b2167	Cu/Cu alloy	4.4		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152. Fig.191
460	Awl	b1146	Cu/Cu alloy	5		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152. Fig.191
461	Awl	b1839	Cu/Cu alloy	5		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152. Fig.191
462	Awl	b1951	Cu/Cu alloy	4.7		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152. Fig.191
463	Awl	b1662	Cu/Cu alloy	5.7		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152. Fig.191
464	Awl	b2088	Cu/Cu alloy	5.7		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152. Fig.191
465	Awl	b1823	Cu/Cu alloy	5.4		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152. Fig.191
466	Awl	b2110	Cu/Cu alloy	5.1		0.25-0.7		Settlement	Stratum II	MBA		Schmidt 1932 p.152. Fig.191
467	Awl?	b2647	Cu/Cu alloy					Burial	Stratum II	MBA	with Skeleton b X31, mortuary gift, incised awl in Plot FF10	Schmidt 1932 p.182, Fig.235
468	Sickle	b1444	Cu/Cu alloy	12.6	2.6	0.25-0.3		Settlement	Stratum II	MBA	saw-toothed edge.	Schmidt 1932 p.154, Fig.196
469	Sickle	b1535	Cu/Cu alloy					Settlement	Stratum II	MBA	No illustrated	Schmidt 1932 p.154
470	Spatula	b1387	Cu/Cu alloy	13.6		0.1		Settlement	Stratum II	MBA	a round tapering handle with flaring spatulate end attached	Schmidt 1932 p.153. Fig.192
471	Rivet	b1223	Cu/Cu alloy					Settlement	Stratum II	MBA		Schmidt 1932 p.164, Fig.204
472	Rivet	b1632	Cu/Cu alloy					Settlement	Stratum II	MBA		Schmidt 1932 p.164, Fig.204
473	Rivet	b1952	Cu/Cu alloy					Settlement	Stratum II	MBA		Schmidt 1932 p.164, Fig.204
474	Stamp	b1921	Cu/Cu alloy	2.2	1.45			Settlement	Stratum II	MBA	in Plot DD19, H: 2.2cm	Schmidt 1932 p.148, Fig.187
475	Stamp	b2423	Cu/Cu alloy	1.8	1.8			Settlement	Stratum II	MBA	in Plot GG9, H: 1.7cm	Schmidt 1932 p.148, Fig.187
476	Needle	b43	Cu/Cu alloy					Settlement	Stratum II	MBA	found Level 7(Stratum I) in Plots L14-15, but Alişar II	Schmidt 1932 p.154, Note.2
477	Needle	b1253	Cu/Cu alloy	2.81				Settlement	Stratum II	MBA	No illustrated	Schmidt 1932 p.154
478	Needle	a939	Cu/Cu alloy					Settlement	Stratum II?		in Plot L14	Schmidt 1932 p.208, Fig.270
479	Needle	b1414	Cu/Cu alloy	7.6				Settlement	Stratum II	MBA		Schmidt 1932 p.156, Fig.197
480	Needle	b1631	Cu/Cu alloy	6.1				Settlement	Stratum II	MBA		Schmidt 1932 p.156, Fig.197
481	Needle	b2498	Cu/Cu alloy	4.8				Settlement	Stratum II	MBA		Schmidt 1932 p.156, Fig.197
482	Needle	b1464	Cu/Cu alloy	6.5				Settlement	Stratum II	MBA		Schmidt 1932 p.156, Fig.197
483	Needle	b1905	Cu/Cu alloy	7.1				Settlement	Stratum II	MBA		Schmidt 1932 p.156, Fig.197
484	Needle	b1524	Cu/Cu alloy	7.8				Settlement	Stratum II	MBA		Schmidt 1932 p.156, Fig.197
485	Needle	b1136	Cu/Cu alloy	8				Settlement	Stratum II	MBA		Schmidt 1932 p.156, Fig.197
486	Needle	b2514	Cu/Cu alloy	9.4				Settlement	Stratum II	MBA		Schmidt 1932 p.156, Fig.197
487	Needle	b1300	Cu/Cu alloy	9.8				Settlement	Stratum II	MBA		Schmidt 1932 p.156, Fig.197
489	Pin	b2650	Cu/Cu alloy					Burial	Stratum II	MBA	with Skeleton b X31, on the chest hear the right clavicle,mortuary gift in Plot FF10	Schmidt 1932 p.182, Fig.235
490	Pin	b2716	Cu/Cu alloy	7.9			2	Settlement	Stratum II	MBA	globular heads, Type a at Boğazköy Ivd	Schmidt 1932 p.158, Fig.200
491	Pin	b1943	Cu/Cu alloy	5.3			2	Settlement	Stratum II	MBA	globular heads with lines on the stick, Type a at Boğazköy Ivd	Schmidt 1932 p.158, Fig.200
492	Pin	b1141	Cu/Cu alloy				4	Settlement	Stratum II	MBA	described globular heads but segmented heads with 16 lines and 3 cut triangles on the stick.	Schmidt 1932 p.158, Fig.200
493	Pin	b1943	Cu/Cu alloy				2	Settlement	Stratum II	MBA	a head with lines	Schmidt 1932 p.158, Fig.200
494	Pin	b2269	Cu/Cu alloy				2	Settlement	Stratum II	MBA	No illustrated, vertical slit.	Schmidt 1932 p.158, Fig.200
495	Pin	b1127	Cu/Cu alloy	8.5			2	Settlement	Stratum II	MBA	only one type in hexagonal-globular	Schmidt 1932 p.158, Fig.200
496	Pin	b1269	Cu/Cu alloy	8.5			2	Settlement	Stratum II	MBA	elliptical heads, Type b at Boğazköy Ivd	Schmidt 1932 p.158, Fig.200
497	Pin	b1259	Cu/Cu alloy	7.2			2	Settlement	Stratum II	MBA	elliptical heads with mid-point, Type b at Boğazköy Ivd	Schmidt 1932 p.158, Fig.200
498	Pin	b2694	Cu/Cu alloy	9.2			2	Settlement	Stratum II	MBA	elliptical heads with incised line below the head, Type b at Boğazköy Ivd	Schmidt 1932 p.158, Fig.200
499	Pin	b1286	Cu/Cu alloy	8.6			1	Settlement	Stratum II	MBA	semiglobular heads with mid-point and 8 grooved, Type b at Boğazköy Ivd	Schmidt 1932 p.158, Fig.200

Consecutive No.	Class	Alishar No.	Classify	Length(cm)	Width(cm)	Thickness(cm)	Type	Context	Phase	Period	Remarks	Reference
500	Pin	b2799	Cu/Cu alloy	6.7			1	Settlement	Stratum II	MBA	semiglobular heads, Type b at Boğazköy Ivd	Schmidt 1932 p.158, Fig.200
501	Pin	b1291	Cu/Cu alloy	5.9			1	Settlement	Stratum II	MBA	semiglobular heads, slightly elliptical (10mmx7mm), Type b or e at Boğazköy Ivd	Schmidt 1932 p.158, Fig.200
502	Pin	b1417	Cu/Cu alloy	9.7			6	Settlement	Stratum II	MBA	conical heads, Type b at Boğazköy Ivd	Schmidt 1932 p.158, Fig.200
503	Pin	b2587	Cu/Cu alloy	9.1			6	Settlement	Stratum II	MBA	conical heads with 4 grooved, Type b at Boğazköy Ivd	Schmidt 1932 p.158, Fig.200
504	Pin	b1625	Cu/Cu alloy	8.3			6	Settlement	Stratum II	MBA	conical heads with 8 grooved, Type b at Boğazköy Ivd	Schmidt 1932 p.158, Fig.200
505	Pin	b1542	Cu/Cu alloy	9.5			6	Settlement	Stratum II	MBA	conical heads, Type b at Boğazköy Ivd	Schmidt 1932 p.158, Fig.200
506	Pin	b1389	Cu/Cu alloy	6.6			6	Settlement	Stratum II	MBA	conical heads, Type b at Boğazköy Ivd	Schmidt 1932 p.158, Fig.200
507	Pin	b1617	Cu/Cu alloy	7.5			6	Settlement	Stratum II	MBA	conical heads with 8 grooved, Type b at Boğazköy Ivd	Schmidt 1932 p.158, Fig.200
508	Pin	b1144	Cu/Cu alloy	8.3			6	Settlement	Stratum II	MBA	conical heads, Type b at Boğazköy Ivc	Schmidt 1932 p.160, Fig.201
509	Pin	b1179	Cu/Cu alloy	5.7			6	Settlement	Stratum II	MBA	conical heads, Type b at Boğazköy Ivd	Schmidt 1932 p.160, Fig.201
510	Pin	b1420	Cu/Cu alloy	7.2			3	Settlement	Stratum II	MBA	polyhedral head, Type c? at Boğazköy Ivd	Schmidt 1932 p.160, Fig.201
511	Pin	b1173	Cu/Cu alloy	8.4			8	Settlement	Stratum II	MBA	with 14 linesbelow the head, ear-dropped, Type q at Boğazköy Ivd	Schmidt 1932 p.160, Fig.201
512	Pin	b2431	Cu/Cu alloy	7.3			4	Settlement	Stratum II	MBA	two-lobed	Schmidt 1932 p.160, Fig.201
513	Pin	b1442	Cu/Cu alloy	7.9			7	Settlement	Stratum II	MBA	horizontal cylinder, Type f at Boğazköy Ivd	Schmidt 1932 p.160, Fig.201
514	Pin	b2256	Cu/Cu alloy	8			7	Settlement	Stratum II	MBA	discoid, Type f at Boğazköy Ivd	Schmidt 1932 p.160, Fig.201
515	Pin	b2391	Cu/Cu alloy	5.1			7	Settlement	Stratum II	MBA	discoid, Type f at Boğazköy Ivd	Schmidt 1932 p.160, Fig.201
516	Pin	b1174	Cu/Cu alloy	9.1			7	Settlement	Stratum II	MBA	scalloped, Type g at Boğazköy Ivd	Schmidt 1932 p.160, Fig.201
517	Pin	b1879	Cu/Cu alloy				7	Settlement	Stratum II	MBA	No illustrated, vertical slit 3cm	Schmidt 1932 p.160, Fig.201
518	Pin	b2655	Cu/Cu alloy	10.5			7	Burial	Stratum II	MBA	scalloped, long, with Skelton bx45 in Plot DD10, mortuary gift, Type g at Boğazköy Ivd	Schmidt 1932 p.160, Fig.201
519	Pin	b2176	Cu/Cu alloy	9.3			7	Settlement	Stratum II	MBA	disk heads, a herring bone pattern below the head, Type g at Boğazköy Ivd	Schmidt 1932 p.160, Fig.201
520	Pin	b1819	Cu/Cu alloy	7.8			7	Settlement	Stratum II	MBA	disk heads, two horizontal grooves, Type g at Boğazköy Ivd	Schmidt 1932 p.160, Fig.201
521	Pin	b2798	Cu/Cu alloy	5.2			7	Settlement	Stratum II	MBA	disk heads, grooves and oblique strokes below the head, Type g at Boğazköy Ivd	Schmidt 1932 p.160, Fig.201
522	Pin	b1851	Cu/Cu alloy	9.1			4	Settlement	Stratum II	MBA	8 fluted discoid heads, Type k at Boğazköy Ivd or Ivc	Schmidt 1932 p.161, Fig.202
523	Pin	b2642	Cu/Cu alloy	6.1			4	Settlement	Stratum II	MBA	5 fluted discoid heads, Type k at Boğazköy Ivd	Schmidt 1932 p.161, Fig.202
524	Pin	b1874	Cu/Cu alloy	8.1			4	Settlement	Stratum II	MBA	6 pointed stars heads, Type k at Boğazköy Ivd	Schmidt 1932 p.161, Fig.202
525	Pin	b1852	Cu/Cu alloy	4.2			4	Settlement	Stratum II	MBA	6 pointed stars heads, Type k at Boğazköy Ivd	Schmidt 1932 p.161, Fig.202
526	Pin	b1479	Cu/Cu alloy	7.7			4	Settlement	Stratum II	MBA	6 vertical wings, herring bone patterrn and horizontal grooves	Schmidt 1932 p.161, Fig.202
527	Pin	b2495	Cu/Cu alloy	8.5			1	Settlement	Stratum II	MBA	plano-convex type	Schmidt 1932 p.161, Fig.202
528	Pin	b2051	Cu/Cu alloy	7.7			1	Settlement	Stratum II	MBA	plano-convex type	Schmidt 1932 p.161, Fig.202
529	Pin	b1418	Cu/Cu alloy	8.9			9	Settlement	Stratum II	MBA	coiled heads, made by rolling up, Type o at Boğazköy Ivd or Ivb	Schmidt 1932 p.161, Fig.202
530	Pin	b2767	Cu/Cu alloy	8.5			9	Settlement	Stratum II	MBA	coiled heads, Type o at Boğazköy Ivd or Ivb	Schmidt 1932 p.161, Fig.202
531	Pin	b2301	Cu/Cu alloy	5.4			9	Settlement	Stratum II	MBA	coiled heads, Type o at Boğazköy Ivd or Ivb	Schmidt 1932 p.161, Fig.202
532	Pin	b1254	Cu/Cu alloy	8			10	Settlement	Stratum II	MBA	lanceolate heads, flat and bent at a right angle to the shaft, not found in Boğazköy	Schmidt 1932 p.161, Fig.202
533	Pin	b2206	Cu/Cu alloy	10.4			10	Settlement	Stratum II	MBA	animal heads, rectangular cross-section, double-bird heads, not found in Boğazköy	Schmidt 1932 p.161, Fig.202
534	Pin	b1904	Cu/Cu alloy	9.5			10	Settlement	Stratum II	MBA	animal heads	Schmidt 1932 p.161, Fig.202
535	Pin	b1119	Cu/Cu alloy	7.7			10	Settlement	Stratum II	MBA	animal heads	Schmidt 1932 p.161, Fig.202
536	Pin	b1343	Cu/Cu alloy, glass	8.5			4	Burial	Stratum II	MBA	in Plot FF10, glazed 6 frits, mortuary gift, Type k at Boğazköy Ivd	Schmidt 1932 p.162, Fig.203
537	Pin	b1881	Cu/Cu alloy, glass	8.1			4	Settlement	Stratum II	MBA	in Plot GG9, white glazed frit, 7 scallops and globular, Type k at Boğazköy Ivc	Schmidt 1932 p.162, Fig.203
538	Pin	b1621	Cu/Cu alloy, glass	6.2			4	Settlement	Stratum II	MBA	in Plot FF11, white glazed frit, globular, found with Seal b1529, Type a at Boğazköy Ivd	Schmidt 1932 p.162, Fig.203
539	Pin	b1910	Cu/Cu alloy, glass	6.8			2	Settlement	Stratum II	MBA	in Plot GG10, globular, bluish white glazed frit, Type a at Boğazköy Ivd?	Schmidt 1932 p.162, Fig.203
540	Pin	a951	Cu/Cu alloy	5.8				Deposit	Stratum III		Alishar III deposit of Plot L14	Schmidt 1932 p.208, Fig.270
541	Pin	a937	Cu/Cu alloy	7			2	Deposit	Stratum III		Alishar III deposit of Plot L14, globular head	Schmidt 1932 p.208, Fig.270
542	Pin	a1045	Cu/Cu alloy	6.8			10	Settlement	Stratum III		early Alishar III L6, coiled head	Schmidt 1932 p.208, Fig.270
543	Pin	a998	Cu/Cu alloy	5.6				Settlement	Stratum III		early Alishar III L6	Schmidt 1932 p.208, Fig.270
544	Bracelet	b1499	Cu/Cu alloy	4.4	3.9			Settlement	Stratum II	MBA	an oval cross-section: 0.35-0.55cm, round point	Schmidt 1932 p.157, Fig.198
545	Bracelet	b1075	Cu/Cu alloy	4	4.2			Settlement	Stratum II	MBA	a part of the square section, no overlapping ends	Schmidt 1932 p.157, Fig.198

Consecutive No.	Class	Alishar No.	Classify	Length(cm)	Width(cm)	Thickness(cm)	Type	Context	Phase	Period	Remarks	Reference
546	Bracelet	b1270	Cu/Cu alloy	4.2	3.9			Settlement	Stratum II	MBA	oval cross-section: 0.2-0.4cm	Schmidt 1932 p.157, Fig.198
547	Rings	b1433	Cu/Cu alloy	2.1	2.2			Burial	Stratum II	MBA	with Skeleton b X18, earing?, buttle? In Plot DD20, mortuary gift	Schmidt 1932 p.157, Fig.199
548	Rings	b1429	Cu/Cu alloy	1.3	1.4			Burial	Stratum II	MBA	with Skeleton b X23, right and left earings,mortuary gift in Plot FF10	Schmidt 1932 p.190, Fig.248, p.182
549	Ring	b2229	Cu/Cu alloy	2.7	2.1			Settlement	Stratum II	MBA	a square cross-section	Schmidt 1932 p.157, Fig.199
550	Ring	b2399	Cu/Cu alloy	2.9	2.1			Settlement	Stratum II	MBA	wrapped in triple layered, role of catch in one side point	Schmidt 1932 p.157, Fig.199
551	Rings frags.	b2822	Cu/Cu alloy					Burial	Stratum II	MBA	with Skeleton b X41, left earing in Plot FF10, mortuary gift	Schmidt 1932 p.157, Fig.199, p.185, Fig.236
552	Ring	b1284	Cu/Cu alloy	2.3	2.2			Settlement	Stratum II	MBA		Schmidt 1932 p.157, Fig.199
553	Ring	b2059	Cu/Cu alloy	2.9	2.9			Settlement	Stratum II	MBA		Schmidt 1932 p.157, Fig.199
554	Ring	b2159	Cu/Cu alloy	1.3	1.5			Settlement	Stratum II	MBA		Schmidt 1932 p.157, Fig.199
555	Ring	b1407	Cu/Cu alloy	1.2	1.2			Settlement	Stratum II	MBA		Schmidt 1932 p.157, Fig.199
556	Ring	b2649	Cu/Cu alloy	1.2	1.2			Settlement	Stratum II	MBA		Schmidt 1932 p.157, Fig.199
557	Ring	b1165	Cu/Cu alloy	2.2	2.6			Settlement	Stratum II	MBA		Schmidt 1932 p.157, Fig.199
558	Earring	b1226	Cu/Cu alloy					Burial	Stratum II	MBA	with Skeleton b X16, mortuary gift, no illustration	Schmidt 1932 p.208, Fig.270
559	Ear pendant?	a954	Cu/Cu alloy	14				Settlement	Stratum III			Schmidt 1932 p.208, Fig.270
560	Pendant?	b1915	Cu/Cu alloy					Settlement	Stratum II	MBA	crescent shaped with broken-off points, Type g at Boğazköy	Schmidt 1932 p.164, Fig.205
561	Wire frag,	b1967	Cu/Cu alloy			1.5×2.5		Settlement	Stratum II	MBA	rectangular	Schmidt 1932 p.164, Fig.204
562	Wire frag,	b2453	Cu/Cu alloy					Settlement	Stratum II	MBA	crescent shaped	Schmidt 1932 p.164, Fig.204
563	Wire frag,	b1822	Cu/Cu alloy			6		Settlement	Stratum II	MBA	bent, Tweezers?	Schmidt 1932 p.164, Fig.204
564	Wire frag,	b2505	Cu/Cu alloy					Settlement	Stratum II	MBA	bracelet?	Schmidt 1932 p.164, Fig.204
565	Mould	b1693	stone	6.4	3.9			Settlement	Stratum II	MBA	3 moulding surfaces, two bars and a round piece. The rock is grayish green serpentine.	Schmidt 1932 p.170, Fig.217

4.2.2. Boğazköy

Table 4.3. Bronze artefacts from Boğazköy.

	Weapons					Tools			Personal items					Others
Context	Daggers	Knives	Spearheads	Axes	Arrowheads	Awls	Sickles	Chisels	Tweezers	Needles	Pins	Bracelets	Rings	Mould, Plate armor
Settlements	5	6	2	1	2	17	3	5	1	34	60	5	2	Socketed point

According to Table 4.3, none of the artefacts from this site came from burial sites or tombs. Rather, all artefacts were found in the settlements, and most of these were excavated in the *kārum* area. Daggers are of three types: 1a, 1b and 2. Spearheads are of two types: 1b and 3. Only one axe was found, a Type 2b flat axe. Pins are of eight types: 1–4 and 6–9. Large numbers of pins and needles were found in this site. In addition, awls were often found. Other objects include one mould, one small plate armour and socketed points. Compared with the numbers of tools and personal items, there are fewer weapons. Nevertheless, knives were often found in this site (see Table 4.4).

Table 4.4. List of bronze artefacts from Boğazköy.

Consecutive No.	Class	Boğazköy No.	Classify	Length(cm)	Width(cm)	Thickness(cm)	Type	Context	Period	Remarks	References
261	Dagger frag.	56	Cu/Cu alloy	2.55	2.9	0.2	1a	Unterstadt. J/20 h/2b, Schicht 4.	MBA		Boehmer 1972, p.45; Taf. IV:56
262	Dagger	57	Cu/Cu alloy	12.15	2.84	0.32	2	Ust. L/18 0/6 in the fire debris layer NWH 8a	MBA	top rivet H: 1.24cm	Boehmer 1972, p.45; Taf. IV:57
263	Dagger	58	Cu/Cu alloy	9.2	3.2	0.35	1a	Ust. K/20, Schicht 4.	MBA	rivet H: 1.2cm	Boehmer 1972, p.45; Taf. IV:58
264	Dagger	59	Cu/Cu alloy	10.94	2.7/1.9	0.2	1a	Ust. K/20a/1, Schicht 4 or older	MBA	larger rivet H: 0.96cm	Boehmer 1972, p.45; Taf. IV:59
265	Dagger	60	Cu/Cu alloy	8.12	2.4	0.22	1b	Ust. K/20, Schicht 4.	MBA		Boehmer 1972, p.45; Taf. IV:60
266	Spearhead	199	Cu/Cu alloy	23.55	4.05	0.45	3	Ust. M/18, Suchschnitt A, Abschnitt Jota: Fire debris in the vascular space.	MBA	tang L: 5.1cm, vent L: 1.7cm, similar type with 'Anitta's spearhead'	Boehmer 1972, p.75; Taf. XII:199
267	Spearhead	201	Cu/Cu alloy	14.1		1.3	1b	Ust. J/20 i/7b Nord, Schicht 4.	MBA		Boehmer 1972, p.75; Taf. XII:201
268	Socketed point	3404	Cu/Cu alloy	13.6	5.28	3.1		Ust. J/19, Schnitt XII/1, aus Ziegelbrandschutt über karumzeitlicher Mauer.	MBA	From Boğazköy has only been one such tool, and indeed from the time Unterstandt I known (No. 1223).	Boehmer 1979, pp.31–32; Taf. XIX: 3404
269	Axe	2486	Cu/Cu alloy	19.4	7.25–8.2	1	2b	Ust. J/20, Haus 13, Raum 14, in Fußbodenfüllung unterhalb der Tonrohrleitung.	MBA	flat axe	Boehmer 1979, p.2; Taf. I: 2486
270	Arrowhead	810	Cu/Cu alloy	more 6.95	2			Ust. J/20 h/1a, in roter Brandschicht, wohl Schicht 4.	MBA		Boehmer 1972, p.107; Taf. XXVI:810
271	Arrowhead	811	Cu/Cu alloy	more 6.7	1.85			Ust. J/20 h/1a, in roter Brandschicht, wohl Schicht 4.	MBA		Boehmer 1972, p.107; Taf. XXVI:811
272	Awl	937	Cu/Cu alloy	5.52	0.45			Ust. L/18 b/6, aus dem Kanal der Schicht NWH. 8a.	MBA	Type Ia	Boehmer 1972, p.115; Taf. XXXII:937
273	Awl	938	Cu/Cu alloy	5.9	0.6×0.6			Ust. K/20, Schicht 4.	MBA	Type Ia	Boehmer 1972, p.115; Taf. XXXII:938
274	Awl	939	Cu/Cu alloy	6.2	0.65			Ust. J/20, Schicht 4.	MBA	Type Ia	Boehmer 1972, p.115; Taf. XXXII:939
275	Awl	940	Cu/Cu alloy	12.5	6.5			Ust. J/20, Schicht 4.	MBA	Type II	Boehmer 1972, p.115; Taf. XXXII:940
276	Awl	941	Cu/Cu alloy	9.4	0.6×0.6			Ust. J/20 g/1b, Schnitt A, Schicht 4.	MBA	Type II	Boehmer 1972, p.115; Taf. XXXII:941
277	Awl	942	Cu/Cu alloy	9.4	0.4			Ust. J/20, Schicht 4.	MBA	Type III	Boehmer 1972, p.115; Taf. XXXII:942
278	Awl	943	Cu/Cu alloy	more 6.57	0.4×0.32			Ust. L/18 b/6, Pithosschnabelkannenhaus, auf dem Boden des Raumes I, Schicht NWH. 8a.	MBA	Type III	Boehmer 1972, p.115; Taf. XXXII:943
279	Awl	3137A	Cu/Cu alloy	10.5	0.36×0.36			Ust. K/20, III/2, Tiefschnitt, Ost, Haus der Ust. 4, neden kleinsteiniger Westmauer, in Holzresten steckend, die im Fußboden lagen.	MBA		Boehmer 1979, p.22: Taf. XLI: 3137A
280	Awl	3137B	Cu/Cu alloy	10.5	0.36×0.36			Ust. K/20, III/2, Tiefschnitt, Ost, Haus der Ust. 4, neden kleinsteiniger Westmauer, in Holzresten steckend, die im Fußboden lagen.	MBA		Boehmer 1979, p.22: Taf. XLI: 3137B
281	Awl	3137C	Cu/Cu alloy	10.1	0.36×0.36			Ust. K/20, III/2, Tiefschnitt, Ost, Haus der Ust. 4, neden kleinsteiniger Westmauer, in Holzresten steckend, die im Fußboden lagen.	MBA		Boehmer 1979, p.22: Taf. XLI: 3137C
282	Awl	3137D	Cu/Cu alloy	9.9	0.36×0.36			Ust. K/20, III/2, Tiefschnitt, Ost, Haus der Ust. 4, neden kleinsteiniger Westmauer, in Holzresten steckend, die im Fußboden lagen.	MBA		Boehmer 1979, p.22: Taf. XLI: 3137D
283	Awl	3137E	Cu/Cu alloy	10.1	0.36×0.36			Ust. K/20, III/2, Tiefschnitt, Ost, Haus der Ust. 4, neden kleinsteiniger Westmauer, in Holzresten steckend, die im Fußboden lagen.	MBA		Boehmer 1979, p.22: Taf. XLI: 3137E
284	Awl	3189	Cu/Cu alloy	10.25	0.35×0.35			Ust. J/20, aus Schutterde unterhalb des Aschenstratums unter Haus 11.	MBA	Type II b	Boehmer 1979, p.24: Taf. XVI: 3189
285	Awl	3190	Cu/Cu alloy	9.1	0.35×0.35			Ust. J/19, Haus 10, aus Füllung vor der Ostecke, 1.8m unter Maueroberkante.	MBA	Type Ia	Boehmer 1979, p.24: Taf. XVI: 3190
286	Awl	3191	Cu/Cu alloy	11.7	0.45×0.45			Ust. J/19, Haus 10, Schutt.	MBA	Type II	Boehmer 1979, p.24: Taf. XVI: 3191
287	Awl	3192	Cu/Cu alloy	more 6.35	0.35			Ust. J/20, Schutt über althethitischen Mauern südlich der Stadtmauer.	MBA	Type III	Boehmer 1979, p.24: Taf. XVI: 3192
288	Awl	3193	Cu/Cu alloy	more 3.95	0.33×0.32			Ust. J/20, Haus 11, Schutt über gewachsenem Fels nahe der Nordmauer.	MBA	Type III	Boehmer 1979, p.24: Taf. XVI: 3193
289	Chisel	209	Cu/Cu alloy	3.41	0.7×0.4			Ust. J/20, Schnitt 3, m 25–30, Schicht 4.	MBA	Type Ia, cross section	Boehmer 1972, p.76; Taf. XIII:209
290	Chisel	2574	Cu/Cu alloy	6.5	0.35×0.35			Ust. J/19, auf Fußboden im althethitischen Haus unter Haus 10.	MBA	Type IIa, cross section	Boehmer 1979, p.9; Taf. VI: 2574
291	Chisel/Awl	210	Cu/Cu alloy	7.95	0.4×0.4			Ust. J/21, Schnitt B, m 76, Schicht 4.	MBA	Type IIa (Schneide abgebrochen), cross section	Boehmer 1972, p.76; Taf. XIII:210
292	Chisel/Awl	211	Cu/Cu alloy	5.6	0.4×0.4			Ust. L/18 c/9, in schwarzer Brandschicht, vermutlich NWH. 8a oder älter.	MBA	Type IIa, cross section	Boehmer 1972, p.76; Taf. XIII:211
293	Chisel/Awl	212	Cu/Cu alloy	10.2	0.5×0.5			BK. y/16, aus massivem Lehmbrand, westlich IV d–Gebäude 2, Raum 2, Schicht Ivd.	MBA	Type IIb, cross section	Boehmer 1972, p.76; Taf. XIII:212
294	Knife	254	Cu/Cu alloy	more 8.1	1.3	0.25		BK. z/16, Raum 2 des verbrannten Ivd–Gebäudes, unter Fußboden aus Lehmerde.	MBA		Boehmer 1972, p.78; Taf. XIII:254
295	Knife	255	Cu/Cu alloy	more 7.2	2.2			Ust. K/20, Schicht 4.	MBA		Boehmer 1972, p.78; Taf. XV:255
296	Knife	256	Cu/Cu alloy	16.5	2	0.38		Ust. K/20, Schicht 4.	MBA	handle L: 11.2cm, handle W: 2.98cm	Boehmer 1972, p.78; Taf. XV:256
297	Knife	256A	Cu/Cu alloy	more 5.9	more 0.9	0.2		Ust., Südareal, Suchschnitt 2, Stratum 6.	MBA		Boehmer 1972, p.78; Taf. XV:256A
298	Knife	2636A	Cu/Cu alloy	more 9.3	2.1	0.29		Ust. K/20, IV/4, Haus 46, Raum 2, Ost, Tiefschnitt, vom Fußboden des Hauses mit Ust. 4–zeitlichen Gefäßen.	MBA		Boehmer 1979, p.11; Taf. XLI: 2636A
299	Knife frag.	2637	Cu/Cu alloy	more 3.7	1.1	0.2		Ust. J/20, Haus 19, Raum 1, in karumzeitlicher Branderde.	MBA		Boehmer 1979, p.11; Taf. VIII: 2637
300	Sickle	1128	Cu/Cu alloy	12.2	2.4	0.31		BK. Aa/17, unter der Unterkante einer Ivd– Mauer aus deren Baugrube.	MBA		Boehmer 1972, p.126; Taf. XXXVII:1128
301	Sickle frag.	1129	Cu/Cu alloy	more 7	2.3	0.4		Ust. K/20, Schicht 4.	MBA		Boehmer 1972, p.126; Taf. XXXVII:1129
302	Sickle frag.	1130	Cu/Cu alloy	more 5	1.5	0.15		Ust. J/21 g–h/10c–d, Erweiterung von Schnitt A, Schicht 4b–c.	MBA		Boehmer 1972, p.126; Taf. XXXVII:1130
303	Pin	279	Cu/Cu alloy	6.3	0.55		2	Ust. J/20, Schicht 4.	MBA	Elongated ball, with cast.	Boehmer 1972, p.86; Taf. XVII:279
304	Pin	280	Cu/Cu alloy	more 6.1	0.85		2	Ust. J/20, Schicht 4.	MBA	Ball head made of stone.	Boehmer 1972, p.86; Taf. XVII:280
305	Pin	281	Cu/Cu alloy	10.2	0.75		2	Ust. J/20, Schicht 4.	MBA	Spherical head, well cast with Horizontal notches on the upper shaft.	Boehmer 1972, p.86; Taf. XVII:281
306	Pin	282	Cu/Cu alloy	6.57	0.88		4	Ust. J/20, Schicht 4.	MBA	Spherical head with vertical notches, with molded horizontal notches on the upper shaft.	Boehmer 1972, p.86; Taf. XVII:282
307	Pin	283	Cu/Cu alloy	6.9	0.8		2	Ust. J/20, Schicht 4.	MBA	Very corroded, flat spherical head, probably with cast.	Boehmer 1972, p.86; Taf. XVII:283
308	Pin	284	Cu/Cu alloy	9.5	0.7		1	Ust. K/20, Schicht 4.	MBA	Conical head, above a deep notch and a radiating pattern attached scoring lines.	Boehmer 1972, p.86; Taf. XVII:284
309	Pin	285	Cu/Cu alloy	7.75	0.6		6	Ust. K/20, Schicht 4.	MBA	Cone–shaped head, with cast.	Boehmer 1972, p.86; Taf. XVII:285
310	Pin	286	Cu/Cu alloy	8.3	0.8		6	Ust. J/20 i/1a, Schnitt A, Schicht 4b.	MBA	Conical head, through the hole in the upper part of the needle shaft: 'Toggle–Pin'	Boehmer 1972, p.86; Taf. XVII:286
311	Pin	287	Cu/Cu alloy	6.23	0.6		6	Ust. K/20, Schicht 4, Raum 18.	MBA	Biconical head, moulded.	Boehmer 1972, p.86; Taf. XVII:287
312	Pin	288	Cu/Cu alloy	10	0.8×0.78		6	Ust. J/20, Schicht 4.	MBA	Pyramid head, moulded.	Boehmer 1972, p.86; Taf. XVII:288
313	Pin	289	Cu/Cu alloy	8.5	0.8×0.8		6	Ust. J/20, Schicht 4.	MBA	Pyramid head, probably with cast.	Boehmer 1972, p.86; Taf. XVII:289
314	Pin	290	Cu/Cu alloy	more 5.8	0.77×0.71		6	Ust. J/20, Schnitt C, m 10–20, Schicht 4.	MBA	Pyramid head, moulded.	Boehmer 1972, p.86; Taf. XVII:290
315	Pin	291	Cu/Cu alloy	10.5	0.6		7	BK., verbranntes Gebäude der Schicht Ivd im Suchschnitt F, Raum 9, im Höhe des Bodens 2a.	MBA	Pan head, moulded.	Boehmer 1972, p.86; Taf. XVII:291
316	Pin	292	Cu/Cu alloy	8	0.62		1	Ust. J/20, Schicht 4.	MBA	Mushroom head, probably with cast.	Boehmer 1972, p.86; Taf. XVII:292
317	Pin	293	Cu/Cu alloy	5	0.8		7	Ust. J/20, Schnitt C, m 30–35, Schicht 4.	MBA	curved washer head, with cast, one possibly coated with sealing compound.	Boehmer 1972, p.86; Taf. XVII:293
318	Pin	294	Cu/Cu alloy	7.95	0.75		6	Ust. L/18 c/6, vom Niveau der Schicht NWH. 8a, auf Gasse.	MBA	Biconical disk head.	Boehmer 1972, p.86; Taf. XVII:294

Consecutive No.	Class	Boğazköy No.	Classify	Length(cm)	Width(cm)	Thickness(cm)	Type	Context	Period	Remarks	References
319	Pin	295	Cu/Cu alloy	6.45	0.85		4	Ust. J/20, Schicht 4.	MBA	Pan head with seven pointed star on the top	Boehmer 1972, p.86; Taf. XVII:295
320	Pin	296	Cu/Cu alloy	9.8	1.1		4	Ust. K/20, Raum 17, Schicht 4.	MBA	segmented head	Boehmer 1972, p.86; Taf. XVII:296
321	Pin	297	Cu/Cu alloy	9.9	1.5		4	Ust. K/20, Raum 17, Schicht 4.	MBA	seven segmented head	Boehmer 1972, p.86; Taf. XVII:297
322	Pin	298	Cu/Cu alloy	9.88	0.8		4	Ust. J/20 k/1a, Schnitt A, Schicht 4b.	MBA	nine segmented head, mounted, shaft sticks out above the head	Boehmer 1972, p.86; Taf. XVII:298
323	Pin	299	Cu/Cu alloy	8.35	1.15		4	Ust. J/20, Schicht 4.	MBA	eight segmented head, mounted.	Boehmer 1972, p.86; Taf. XVII:299
324	Pin	300	Cu/Cu alloy	11.8	1.1		4	Ust. J/20, Schicht 4.	MBA	eight segmented head, mounted.	Boehmer 1972, p.86; Taf. XVII:300
325	Pin	301	Cu/Cu alloy	10	1.3		4	Ust. J/20, Schicht 4.	MBA	eight segmented head, mounted, apparently covered with sealing compound	Boehmer 1972, p.86; Taf. XVII:301
326	Pin	302	Cu/Cu alloy	9.56	1.25		4	Ust. J/20, Schicht 4.	MBA	eight segmented head, mounted, with traces of sealing compound.	Boehmer 1972, p.86; Taf. XVII:302
327	Pin	303	Cu/Cu alloy	8.5	1.3		4	Ust. J/20, Schicht 4.	MBA	eight segmented head, slipped.	Boehmer 1972, p.86; Taf. XVII:303
328	Pin	304	Cu/Cu alloy	8.35	0.9		4	Ust. J/20, Schicht 4.	MBA	seven segmented head, traces of sealing compound (?)	Boehmer 1972, p.86; Taf. XVII:304
329	Pin	305	Cu/Cu alloy	9.35	1		4	Ust. J/20, Schicht 4.	MBA	seven segmented head, attached, traces of sealing compound.	Boehmer 1972, p.86; Taf. XVII:305
330	Pin	306	Cu/Cu alloy	9.6	0.95		4	Ust. J/20, Schicht 4.	MBA	eight segmented head, attached.	Boehmer 1972, p.86; Taf. XVII:306
331	Pin	307	Cu/Cu alloy				4	Ust. J/20 i/7a–b, Schicht 4b.	MBA	six segmented head, attached, in the spaces between liner composition.	Boehmer 1972, p.86; Taf. XVII:307
332	Pin	308	Cu/Cu alloy	9	1.05		4	Ust. J/20 i/7a–b, Schicht 4b.	MBA	seven segmented head, attached, a mass position in trace amounts.	Boehmer 1972, p.86; Taf. XVII:308
333	Pin	309	Cu/Cu alloy	8.4	0.95		4	Ust. J/20 i/7a Süd, Schicht 4a.	MBA	seven segmented head, mounted, sealing compound present in trace amounts.	Boehmer 1972, p.86; Taf. XVII:309
334	Pin	310	Cu/Cu alloy	8.1	0.9		4	Ust. J/20 i/7a Süd, Schicht 4a.	MBA	about eight segmented head, attached, sealing compound.	Boehmer 1972, p.86; Taf. XVII:310
335	Pin	311	Cu/Cu alloy	8.35	0.82		4	Ust. L/18 b/6, aus Pithos an der Westecke des Pithoshauses der Schicht NWH. 8a.	MBA	eight segmented head, mounted, shaft decorated by oblique and horizontal notches.	Boehmer 1972, p.86; Taf. XVII:311
336	Pin	312	Cu/Cu alloy	more 10.8	1.8		4	BK. Aa/16, Raum 1 des Gebäudes der Schicht Ivd, aus Kohlebrand über dem Fußboden.	MBA	eight segmented head, heavily corroded.	Boehmer 1972, p.86; Taf. XVII:312
337	Pin	313	Cu/Cu alloy	10.3	1.05		4	Ust. K/20, Raum 18, Schicht 4.	MBA	seven segmented head, attached.	Boehmer 1972, p.86; Taf. XVII:313
338	Pin	314	Cu/Cu alloy	9.6	1.1		4	Ust. K/20, Raum 18, Schicht 4.	MBA	eight segmented head, attached.	Boehmer 1972, p.86; Taf. XVII:314
339	Pin	315	Cu/Cu alloy	8.8	0.97		4	Ust. L/18 c/6, aus dem Kanal der Schicht NWH. 8a.	MBA	nine segmented head, attached.	Boehmer 1972, p.86; Taf. XVII:315
340	Pin	316	Cu/Cu alloy	8	0.85		4	BK. Bb/17, Suchschnitt über altem Lehmziegelbrand, Schicht Ivd.	MBA	washer head with inlay racess outside notched vertical.	Boehmer 1972, p.86; Taf. XVII:316
341	Pin	317	Cu/Cu alloy	more 5.2	0.65		8	Ust. J/21, Schnitt B, m 25–30, Schicht 4b.	MBA	head L; 0.9cm, club head, with cast.	Boehmer 1972, p.86; Taf. XVIII:317
342	Pin	318	Cu/Cu alloy	more 9.5	0.65		8	Ust. K/20, Raum 16, Schicht 4.	MBA	head L; 1.5cm, teardrop head, with cast.	Boehmer 1972, p.86; Taf. XVIII:318
343	Pin	319	Cu/Cu alloy	more 5.5	0.8		7	Ust. I/20, Schnitt, in mehr als 4 Meter Tiefe, unter Kanalniveau (vgl. Zum Kanalsystem K. Bittel, MDOG. 89, 1957, 8), Schicht 4.	MBA	washer head with the top edge of liner.	Boehmer 1972, p.86; Taf. XVIII:319
344	Pin	320	Cu/Cu alloy	9.3	0.78 × 0.5		3	Ust. J/20, Schicht 4.	MBA	cube head, more broad then deep, grooved above, with cast.	Boehmer 1972, p.86; Taf. XVIII:320
345	Pin	2661	Cu/Cu alloy	8.72	0.9		4	UST. J/19, aus karumzeitlichem Schutt.	MBA	segmented head	Boehmer 1979, p.14; Taf. IX: 2661
346	Pin	2662	Cu/Cu alloy	more 5.6	0.4		6	Ust. J/20, aus karumzeitlichem Brandschutt unter Haus 19.	MBA	Conical head.	Boehmer 1979, p.14; Taf. IX: 2662
347	Pin	2665	Cu/Cu alloy	7.5	0.55		6	Ust. J/19, Schnitt XII/1, aus Schutterde zwischen althethitischen Mauern.	MBA	Conical head.	Boehmer 1979, p.14; Taf. IX: 2665
348	Pin	2666	Cu/Cu alloy	more 4.9	0.8		2	Ust. J/20, Haus 19, Raum 2, aus Ziegelbranderde.	MBA	Flat conical head.	Boehmer 1979, p.14; Taf. IX: 2666
349	Pin	2666A	Cu/Cu alloy	8.81	0.59		6	Ust. K/20, V/4, Tiefschnitt, Schutt über karumzeitlicher (?) Mauer.	MBA	Conical head.	Boehmer 1979, p.14
350	Pin	2667	Cu/Cu alloy	5.3	0.72 × 0.64		6	Ust. J/19, Schnitt XII/1, aus Schutterde zwischen althethitischen Mauern.	MBA	Pyramid head.	Boehmer 1979, p.14; Taf. IX: 2667
351	Pin	2667A	Cu/Cu alloy	5.3	0.6 × 0.6		6	Ust. K/20, Haus 46, Raum 2. Ost, Tiefschnitt, Branderde über Fußboden mit Gefäßen, der älter als Haus 48 ist.	MBA	Pyramid head.	Boehmer 1979, p.14
352	Pin	2667B	Cu/Cu alloy	10.2	0.6 × 0.7		6	Ust. K/20, V/4, Tiefschnitt, aus aschehaltiger Erde über karumzeitlichen (?) Mauern.	MBA	Pyramid head.	Boehmer 1979, p.14
353	Pin	2668	Cu/Cu alloy	10.5	0.65		6	Ust. J/19, Haus 11, aus Schutterde zwischen Fußbodenniveau und tiefer darunter gelegenem Aschenstratum.	MBA	Mushroom head.	Boehmer 1979, p.14; Taf. IX: 2668
354	Pin	2668A	Cu/Cu alloy	7.08	0.62		4	Ust. K/20, V/4, Tiefschnitt, aus aschehaltiger Erde über karumzeitlichen (?) Mauern.	MBA	washer head.	Boehmer 1979, p.14
355	Pin	2669	Cu/Cu alloy	9.2	0.79		4	Ust. J/20, Haus 11, auf Aschenstratum unterhalb des Fußbodenniveaus.	MBA	Washer head with lamellar edge and insert recess.	Boehmer 1979, p.14; Taf. IX: 2669
356	Pin	2670	Cu/Cu alloy	9.5	1		4	Ust. J/20, Haus 32, unter Fußboden, Ust. 3 oder 4.	MBA	Washer head with lamellar edge and insert recess.	Boehmer 1979, p.14; Taf. IX: 2670
357	Pin	2671	Cu/Cu alloy	10.15	1.3		4	wie Nr. 2670.	MBA	segmented head	Boehmer 1979, p.14; Taf. IX: 2671
358	Pin	3405	Cu/Cu alloy	5.2	0.2 × 0.1		6	Ust. J/20, Haus 19, Raum I, aus karumzeitlichem Brandschutt.	MBA	rectangular cross section, See also no. 3439	Boehmer 1979, p.32; Taf. XIX: 3405
359	Pin	3406	Cu/Cu alloy	4.1	0.28 × 0.28		3	Ust. I/20, Schnitt II/5, über Fußboden karumzeitlichen Hauses.	MBA	`Punch 'for sheet metal punching. See also No. 3441–3445 and Boha. VII, No. 997	Boehmer 1979, p.32; Taf. XIX: 3406
379	Pin	340	Cu/Cu alloy	more 8.45	1.1		9	Ust. K/20 a/2, unter großer Brandschicht, Schicht 4.	MBA	Needle rollers, broken roller.	Boehmer 1972, p.86; Taf. XVIII:340
387	Pin	2672	Cu/Cu alloy	more 4.75	0.6 × 0.25		3	Ust. J/19, aus Schutterde am Fundament der Nordecke.	MBA	Narrow, so–called cube head.	Boehmer 1979, p.14; Taf. IX: 2672
388	Pin	2672A	Cu/Cu alloy	10	0.53 × 0.54		3	Ust. K/20, V/4, Tiefschnitt, aus Gefäß neben Kinderskelett.	MBA	Cube head with center notch.	Boehmer 1979, p.14
360	Needle	321	Cu/Cu alloy	10.9				Ust. K/20, Schicht 4.	MBA	Needle shaft without head.	Boehmer 1972, p.86; Taf. XVIII:321
361	Needle	322	Cu/Cu alloy	10.35				Ust. K/20, Schicht 4.	MBA	Needle shaft without head.	Boehmer 1972, p.86; Taf. XVIII:322
362	Needle	323	Cu/Cu alloy	8.3				Ust. K/20, Schicht 4.	MBA	Needle shaft without head.	Boehmer 1972, p.86; Taf. XVIII:323
363	Needle	324	Cu/Cu alloy	more 6.9				Ust. J/21, Schnitt B, m 55, Schicht 4.	MBA	Needle shaft without head.	Boehmer 1972, p.86; Taf. XVIII:324
364	Needle	325	Cu/Cu alloy	9.9				Ust. J/20, Schicht 4.	MBA	Needle shaft without head.	Boehmer 1972, p.86; Taf. XVIII:325
365	Needle	326	Cu/Cu alloy	more 14.1				Ust. L/18 b/6, Pithosschnabelkannenhaus der Schicht NWH. 8a.	MBA	Needle shaft without head.	Boehmer 1972, p.86; Taf. XVIII:326
366	Needle	327	Cu/Cu alloy	11.8				Ust. K/20, Raum 15, 17 und 39, Schicht 4.	MBA	eyelet needle.	Boehmer 1972, p.86; Taf. XVIII:327
367	Needle	328	Cu/Cu alloy	12.2				Ust. K/20, Raum 15, 17 und 39, Schicht 4.	MBA	eyelet needle.	Boehmer 1972, p.86; Taf. XVIII:328
368	Needle	329	Cu/Cu alloy	10.6				Ust. K/20, Raum 15, 17 und 39, Schicht 4.	MBA	eyelet needle.	Boehmer 1972, p.86; Taf. XVIII:329
369	Needle	330	Cu/Cu alloy	9.15				Ust. K/20, Raum 15, 17 und 39, Schicht 4.	MBA	eyelet needle.	Boehmer 1972, p.86; Taf. XVIII:330
370	Needle	331	Cu/Cu alloy	7.6				Ust. J/20, Schicht 4.	MBA	eyelet needle.	Boehmer 1972, p.86; Taf. XVIII:331
371	Needle	332	Cu/Cu alloy	8.8				Ust. J/20, Schicht 4.	MBA	eyelet needle.	Boehmer 1972, p.86; Taf. XVIII:332
372	Needle	333	Cu/Cu alloy	9.8				Ust. J/20, Schicht 4.	MBA	eyelet needle.	Boehmer 1972, p.86; Taf. XVIII:333
373	Needle	334	Cu/Cu alloy	8.25				Ust. J/20 i/7a Süd, Schicht 4a.	MBA	eyelet needle.	Boehmer 1972, p.86; Taf. XVIII:334
374	Needle	335	Cu/Cu alloy	7.35				Ust. J/20 i/7a Süd, Schicht 4a.	MBA	eyelet needle.	Boehmer 1972, p.86; Taf. XVIII:335

Consecutive No.	Class	Boğazköy No.	Classify	Length(cm)	Width(cm)	Thickness(cm)	Type	Context	Period	Remarks	References
375	Needle	336	Cu/Cu alloy	6.9				Ust. L/18 c/6, auf der Gasse, Schicht NWH. 8a.	MBA	eyelet needle, broken in the eye.	Boehmer 1972, p.86; Taf. XVIII:336
376	Needle	337	Cu/Cu alloy	10.4				BK. Aa/16, Suchschnitt 3, Raum 3, Hallensüdwestwand, unmittelbar auf massivem Lehmziegelbrand, vor Mauer der Schicht Ivd.	MBA	eyelet needle.	Boehmer 1972, p.86; Taf. XVIII:337
377	Needle	338	Cu/Cu alloy	8.85				BK., aus Schutterde über dem verbrannten Gebäude der Schicht Ivd, unter Kiesçorak, zusammen mit Keramik der Schicht Ivd.	MBA	eyelet needle.	Boehmer 1972, p.86; Taf. XVIII:338
378	Needle	339	Cu/Cu alloy	11.8				BK. Aa/17, unter Unterkante des Ivd- Bodens aus der Baugrube der Ivd- Mauer.	MBA	eyelet needle.	Boehmer 1972, p.86; Taf. XVIII:339
380	Needle	2663	Cu/Cu alloy	9.6				Ust. J/20, Haus 13, Raum 3, Tiefgrabung, vom Fußboden des Hauses mit den Pithosschnabelkannen.	MBA	eye pointed needle	Boehmer 1979, p.14; Taf. IX: 2663
381	Needle	2663A	Cu/Cu alloy	11.5				Ust. J/20, Haus 13, Raum 14, auf dem Boden des Hauses der Ust. 4.	MBA	eye pointed needle	Boehmer 1979, p.14; Taf. IX: 2663A
382	Needle	2663B	Cu/Cu alloy	10.75				Ust. J/20, Haus 13, Raum 15, aus Aschenboden der Ust. 4.	MBA	eye pointed needle	Boehmer 1979, p.14
383	Needle	2663C	Cu/Cu alloy	10.6				wie Nr. 2663B.	MBA	eye pointed needle	Boehmer 1979, p.14
384	Needle	2664	Cu/Cu alloy	9.75				wie Nr. 2663.	MBA	headless needle.	Boehmer 1979, p.14; Taf. IX: 2664
385	Needle	2664A	Cu/Cu alloy	9.5				wie Nr. 2663B.	MBA	headless needle. Upper end of the shaft decorated with chevrons.	Boehmer 1979, p.14
386	Needle	2664B	Cu/Cu alloy	7.4				wie Nr. 2663B.	MBA	headless needle.	Boehmer 1979, p.14
389	Needle	2673	Cu/Cu alloy	8.55				Ust. J/19, Haus 11, aus Lehmerde zwischen Fußbodenniveau und tiefer gelegenem Aschenstratum, im Herdraum unter Haus 11.	MBA	Needle with a bent hook-shaped upper end.	Boehmer 1979, p.14; Taf. IX: 2673
390	Needle	2674	Cu/Cu alloy	9.9				Ust. J/19, Haus 11, aus Schutterde zwischen Fußbodenniveau und tiefer darunter gelegenem Aschenstratum, im Herdraum unter Haus 11.	MBA	eye pointed needle	Boehmer 1979, p.14; Taf. IX: 2674
391	Needle	2675	Cu/Cu alloy	17.3				Ust. J/20, aus Brandschutt seitlich der Westmauer von Haus 13.	MBA	eye pointed needle	Boehmer 1979, p.14; Taf. IX: 2675
392	Needle	2676	Cu/Cu alloy	8.4				Ust. J/20, Haus 11, aus Schutterde auf dem Aschenboden des Herdraumes unter Haus 11.	MBA	eye pointed needle	Boehmer 1979, p.14; Taf. IX: 2676
393	Needle	2677	Cu/Cu alloy	10				Ust. J/19, Schnitt XII/1, aus Schutterde zwischen althethitischen Mauern.	MBA	eye pointed needle	Boehmer 1979, p.14; Taf. IX: 2677
394	Needle	2678	Cu/Cu alloy	8				Ust. J/20, Haus 13, Raum 9, aus brandschutthaltiger Erde unter der Füllung der 'old building' 13.	MBA	eye pointed needle	Boehmer 1979, p.14
395	Needle	2678A	Cu/Cu alloy	7.7				Ust. K/20, Haus 46, Raum 2. Ost, Tiefschnitt, Branderde über Fußboden mit Gefäßen, der älter als Haus 48 ist.	MBA	eye pointed needle	Boehmer 1979, p.14
396	Needle	2679	Cu/Cu alloy	4.85				Ust. J/19-20, Haus 11, Ust. 3 oder 4.	MBA	Pin without head (No. 2664)	Boehmer 1979, p.14
397	Bracelet/Bangle	1015	Cu/Cu alloy	3.55		0.3		Ust. K/20, Schicht 4.	MBA	Bangle, the third tunes.	Boehmer 1972, p.122; Taf. XXXIV:1015
398	Bracelet/Bangle	1016	Cu/Cu alloy	3.45		0.3		wie Nr. 1015.	MBA	Bangle, one and a half tunes.	Boehmer 1972, p.122; Taf. XXXIV:1016
399	Bracelet/Bangle	1017	Cu/Cu alloy	4.5		0.51		Ust. L/18 c/6, aus Kanel der Schicht NWH. 8a.	MBA	Bracelet, one and a half tunes.	Boehmer 1972, p.122; Taf. XXXIV:1017
400	Bracelet/Bangle	1018	Cu/Cu alloy	4.4	3.3	0.55		Ust. J/20 g/1b-h/1a, ca. 15-20cm unter der die Schicht 4 abdrckenden Brandschicht.	MBA	Bangle, one and a half tunes.	Boehmer 1972, p.122; Taf. XXXIV:1018
401	Bracelet/Bangle	1019	Cu/Cu alloy	5.75		0.25×0.6		Ust. K/20, Schicht 4.	MBA	Bracelet overlapping ends.	Boehmer 1972, p.122; Taf. XXXIV:1019
402	Ring	1019A	Cu/Cu alloy	3.2		0.21×0.3		Ust., Südareal, Suchschnitt 2, auf Mauer6. Zeit von Büyükkale Ivd (oder jünger).	MBA	Open ring of oval section.	Boehmer 1972, p.122; Taf. XXXIV:1019A
403	Ring	3334	Cu/Cu alloy	1.75		0.25		Ust. J/19, Brandboden unter Haus 10.	MBA	Open finger ring.	Boehmer 1979, p.27; Taf. XVII: 3334
404	Plate armor	803	Cu/Cu alloy	more 3.8	2.2			Ust. J/20 h/1c, aus Brandschutt der Schicht 4b.	MBA		Boehmer 1972, p.104; Taf. XXV:803
405	Tweezers	1006	Cu/Cu alloy	6.72	0.52-0.8			BK. z/17-18, loam soil under debris from filling up with IVD-ceramics.	MBA		Boehmer 1972, p.118; Taf. XXXIV:1006
406	Mould	2215	Stone	7.8	5.4	1.7		Ust. K/20, Raum 8, Schicht 4.	MBA	Black brown limestone. One side open mould, a figurine	Boehmer 1972, p.217; Taf.LXXXV:2215
407	Mould	2216	Stone	5.1	3.7	1.6		Ust. J/20 i/2, Schicht 4.	MBA	Light gray stone. Two surfaces open mould, bars	Boehmer 1972, p.217; Taf.LXXXV:2216.

4.2.3. Kültepe

A number of bronze artefacts were found in tombs in Kültepe. The contexts are generally clear, allowing the phase to be determined. These artefacts were found in *Kārum* Kanesh levels II and Ib, in which levels, according to Özgüç (1986), many tombs were found. Burial rites characteristic of *Kārum* Kanesh levels II and Ib are burial in pits, jars or stone cists (Özgüç 1986: 23). In particular, during *Kārum* Kanesh level Ib cist-graves were commonly placed under the floor of room in which the deceased had previously lived (Özgüç 1986: 2, 23). Unfortunately, the contexts of a few bronze artefacts are unknown, and they have been excluded from the analysis.

Table 4.5. Bronze artefacts from Kültepe.

	Weapons						Tools						Personal items			Others
Context	Daggers	Knives	Spearheads	Axes	Arrowheads	Tridents	Moulds	Sickles	Chisels	Vessels	Bowls	Spools	Pins	Bracelets	Rings	
Settlements in *Kārum* II	0	0	0	0	1	1	5	0	0	0	0	0	0	0	0	
Settlements in *Kārums* II/Ib	1	0	0	7	5	0	9	0	0	0	0	0	0	0	0	
Settlements in *Kārum* Ib	0	2	0	3	0	0	7	0	2	0	0	0	0	0	0	
Workshops in *Kārum* II	0	0	0	0	0	0	17	1	0	0	0	0	0	0	0	
Workshops in *Kārums* II/Ib	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	
Workshops in *Kārum* Ib	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	
Tombs in *Kārum* II	0	0	1	6	0	0	0	0	0	0	0	0	5	0	1	Pan
Tombs in *Kārums* II/Ib	4	0	2	0	0	0	0	0	0	7	0	0	2	0	1	Axe-Hammer, Breast cover, Belt buckles
Tombs in *Kārum* Ib	5	0	3	5	1	2	0	0	0	0	1	3	18	2	2	Bucket
Palaces	2	0	1	0	0	0	0	0	0	0	1	0	0	0	0	Scepter, Cup, Goblet

As can be seen from Table 4.5, bronze artefacts came from four contexts, settlements, workshops, tombs and palaces. Weapons were divided into daggers, knives, spearheads, axes, arrowheads and tridents. Daggers are of four types: 1a, 1b,1c and 2. Most spearheads are of Type 1a, with only one of Type 3. Axes are of four types: 1, 2a, 2b and 3. It seems likely that axes were imported from Syria and Palestine (Özgüç 1986: 44–46 and 74). Tridents are of two types: 1 and 2. Type 2 tridents were rarely found as weapons in this period, and finds of type of trident in Anatolia are unusual. Bronze vessels or pots were buried as grave goods. In addition, a few cups and bowls were found in the palace, suggesting that they were used there. Pins are distinctive, because two new types, both local and foreign, appear in *Kārum* Kanesh level Ib (Özgüç 1986: 72). Pin Type 5 is the

toggle pin, which sometimes has an eyelet in the middle of the pin. T. Özgüç (1959: 110) suggests that merchants imported these. Pin No. 191 has a separated pinhead top which is also segmented, and represents the characteristic type at this site. Furthermore, Nos 193–197 were local pin types in Anatolia (Özgüç 1986: 72–3). All types of rings were precious objects in Anatolia. In Kültepe, those discovered were unique to this site. For instance, No. 198 was a carnelian on bronze earring. Nos 200–201, which were used as earrings, were gold-plated on bronze. No. 199 is a stone weight with a bronze ring. In addition, breast covers were found in the pithos/jar burials. Belt buckles appeared in this period for the first time. Two round pieces with small holes near the edges had an unknown purpose.

To sum up, various weapons, tools and personal items were buried with human remains. Weapons such as axes were buried in *Kārum* Kanesh level II, while types of pin increased in *Kārum* Kanesh level Ib. Thus, it is shown that Syrian-style goods were buried as grave goods; it would seem that these objects came from Syria via merchants. Moreover, it seems that particular objects were confined to *Kārum* Kanesh level Ib. For example, pins and daggers were mostly found in this level. This fact is probably related to a prosperous period of bronze manufacture in Kültepe (see Table 4.6).

4.2.4. Other sites in Anatolia

To compare Kaman-Kalehöyük with other sites in Anatolia, eleven archaeological sites with bronze objects are shown in Table 4.7.

Table 4.6. List of bronze artefacts from Kültepe.

Consecutive No.	Class	Kültepe No.	Classify	Length(cm)	Diameter/Width(cm)	Thickness(cm)	Type	Context	Period	Remarks	References
100	Axe		Cu/Cu alloy	10	10.2		1	tomb	Karum II	with triangular blade and 2 pierced oval holes, imported from northern Syria, cist-grave	Erkanal 1977, p.22 entry 69, pl.6.69
101	Axe	Kt.f/K393	Cu/Cu alloy				2a	tomb	Karum II	Ankara	Özgüç,T. 1986, Pl.88, 7
102	Axe	Kt.c/K199	Cu/Cu alloy				2a	tomb	Karum II	unique at Kanish, in Ankara museum	Özgüç,T. 1986, Pl.89, 3
103	Axe	Kt.84/K90	Cu/Cu alloy	8.8	12.5	2.2	1	tomb	Karum II	Kyseri, semilar type to Byblos, Ras Shamra	Özgüç, T. 1986, Pl.90, 2
104	Axe	Kt.84/K82	Cu/Cu alloy	10.8	6.9	1	1	tomb	Karum Ib	Kyseri, semilar type to Byblos, Ras Shamra	Özgüç,T. 1986, Pl.90, 3
105	Axe	Kt.83/K201	Cu/Cu alloy	5.2	3	1	1	tomb	Karum Ib	tomb gift, Kayseri	Özgüç,T. 1986, Pl.90, 4
106	Axe	Kt.84/K20	Cu/Cu alloy	11.8	3.2	2.3	2a	tomb	Karum Ib	first occurrence in Anatolia, imported from Syria, cist-grave, Kayseri museum	Özgüç,T. 1986, Pl.128, 5
107	Axe	Kt.ş/K65	Cu/Cu alloy	15	6.5		3	tomb	Karum Ib	rare type in Anatolia, Ankara	Özgüç,T. 1986, Pl.128, 6; Fig.59
108	Axe		Cu/Cu alloy	9.5	2.6		2b	Settlement	Karum Ib	flat axe	Deshayes 1960, 1088; Erkanal 1977, p.3, entry 1, pl.11
109	Axe		Cu/Cu alloy	11.8	8		2b	Settlement	MBA	flat axe	Erkanal 1977, p.3 entry 3, pl.1.3; Deshayes 1960, 1089
110	Axe		Cu/Cu alloy	14	5.3		2b	Settlement	MBA	flat axe	Erkanal 1977, p.3 entry 2, pl.1.3; Deshayes 1960, 1090
111	Axe		Cu/Cu alloy	15.5	4		2b	Settlement	MBA	flat axe	Erkanal 1977, p.5 entry 17, pl.2.17
112	Axe		Cu/Cu alloy	13.3	2.4		2b	Settlement	Karum Ib	flat axe	Erkanal 1977, p.7 entry 39, pl.3.39
113	Axe		Cu/Cu alloy	10.3	3.2		2a	tomb	Karum II	shaft hole axe	Erkanal 1977, p.18 entry 64, pl.6.64
114	Axe		Cu/Cu alloy				2a	Settlement	1800BC	shaft hole axe	Deshayes 1960, 1574
115	Axe		Cu/Cu alloy	13.8	6		2a	tomb	Karum Ib	shaft hole axe	Deshayes 1960, 1513; Erkanal 1977, p.15, entry 59, pl.5.59
116	Axe		Cu/Cu alloy				2a	Settlement	MBA	shaft hole axe	Deshayes 1960, 1418
117	Axe		Cu/Cu alloy	20.5	7.8		2a	Settlement	MBA	shaft hole axe	Erkanal 1977, p.18 entry 65, pl.6.65
118	Axe		Cu/Cu alloy				2b	Settlement	Karum Ib	single/flat axe	Deshayes 1960, 501
119	Axe		Cu/Cu alloy				1	Settlement	MBA	shaft hole, fenestrated axe	Özgüç,T.1986, pl. 89.5
120	Axe		Cu/Cu alloy	16.9	1.8 and 1.85		2b	tomb	Karum II	Double flat axe	Deshayes 1960, 2081; Erkanal 1977, p.21, entry 66, pl.6.66
121	Axe-Hammer		Cu/Cu alloy	2	17	2		tomb	MBA		Erkanal 1977, pl. 6.66; Gernez 2007c, Pl.210.4
122	Dagger		Cu/Cu alloy	24	3.8		2	tomb	Karum Ib		Özgüç, T. 1959, Fig.69; Pl.XLVIII, 4
123	Dagger		Cu/Cu alloy	13.3	4.3		1b	tomb	Karum Ib		Özgüç, T. 1959, Fig.70; Pl.XLIX, 2
124	Dagger frag.		Cu/Cu alloy	8	2.7		1c	tomb	Karum Ib		Özgüç, T. 1959, Fig.71; Pl.XLIX, 3
125	Dagger		Cu/Cu alloy	22	4.3		1b	tomb	Karum Ib		Özgüç, T. 1959, Fig.72
126	Dagger		Cu/Cu alloy	21.4	4.2		1b	tomb	Karum Ib		Özgüç, T. 1959, Fig.74
127	Dagger		Cu/Cu alloy	11	1.7		1c	Settlement	MBA		Gernez 2007c, pl.605.5
128	Dagger		Cu/Cu alloy	16.4	1.7		1c	palace	MBA		Özgüç, T. 1986, pl. 129.4; Gernez 2007c, pl.600.5
129	Dagger		Cu/Cu alloy	41.6	5.4		2	palace	MBA		Özgüç, T. 1986, pl. 129.3; Gernez 2007c, pl.577.5
130	Dagger		Cu/Cu alloy	8.9	2.6		2	tomb	MBA		Erkanal 1977, pl. 10.1; Gernez 2007c, pl. 526.1
131	Dagger		Cu/Cu alloy	10.8	3.6		1a	tomb	MBA		Erkanal 1977, pl. 11.10; Gernez 2007c, pl. 590.5
132	Dagger		Cu/Cu alloy	9.4	2.6		1a	tomb	MBA		Erkanal 1977, pl. 11.9; Gernez 2007c, pl. 590.6
133	Dagger		Cu/Cu alloy	9.2	2.8		1a	tomb	MBA	cist grave 3	Gernez 2007c, pl.591.6
134	Knife		Cu/Cu alloy	20.5	2.2	0.4		Settlement	Karum Ib	2 rivets in the hilt, first occurrence in level Ib	Özgüç, T. 1959, Fig.62; Pl.XLVIII, 2
135	Knife		Cu/Cu alloy					Settlement	Karum Ib		Deshayes 1960, 2421
136	Chisel		Cu/Cu alloy	6	1			Settlement	Karum Ib		Müller-Karpe 1994, p.228, pl.65.4
137	Chisel		Cu/Cu alloy					Settlement	Karum Ib		Deshayes 1960, 976
138	Sickle		Cu/Cu alloy					workshop	Karum II	workshop 7?	Müller-Karpe 1994, p.52, pl.84.18
139	Spearhead		Cu/Cu alloy	27	3		1a	tomb	Karum II		Özgüç, T. 1959, Fig.67; Pl.XLIX, 8
140	Spearhead frag.		Cu/Cu alloy	15.5	2.8		1a	tomb	Karum Ib		Özgüç, T. 1959, Fig.68; Pl.XLIX, 7
141	Spearhead		Cu/Cu alloy	29	2.5		1a	tomb	Karum Ib		Özgüç, T. 1959, Fig.66; Pl.XLVIII, 1
142	Spearhead		Cu/Cu alloy	23.8	3.2		1a	tomb	Karum Ib		Özgüç, T. 1959, Fig.73
143	Spearhead		Cu/Cu alloy	29.1/24.8	4.4/2.1		3	palace	Karum Ib/Mound Lev.7	The palace of Anitta, the King', squared sholders, found in CII/83 on the floor, mound strage	Özgüç, T. 1999 p.126; Pl. 107, 1a-c; Fig. E.15
144	Spearhead frag.		Cu/Cu alloy	12.8	1.8		1a	tomb	MBA	cist grave 3	Gernez 2007c, pl.431.9
145	Spearhead		Cu/Cu alloy	17.6	2		1a	tomb	MBA	cist grave 2	Gernez 2007c, pl.431.10

Consecutive No.	Class	Kültepe No.	Classify	Length(cm)	Diameter/Width(cm)	Thickness(cm)	Type	Context	Period	Remarks	References
146	Arrowhead		Cu/Cu alloy					Settlement	Karum II	first occurrence in level II	Özgüç, T. 1959, Pl.XLIX, 4
147	Arrowhead		Cu/Cu alloy					tomb	Karum Ib	longer flanges	Özgüç, T. 1959, Pl.XLIX, 5
148	Arrowhead		Cu/Cu alloy	5.4	2.4			Settlement	MBA		Özgüç T. 1986, pl. 129.5; Gernez 2007c, pl.477.2
149	Arrowhead		Cu/Cu alloy	5.2	2			Settlement	MBA		Özgüç T. 1986, pl. 129.6; Gernez 2007c, pl.477.3
150	Arrowhead		Cu/Cu alloy	5.2	2.2			Settlement	MBA		Erkanal 1977, pl. 17.56; Gernez 2007c, pl. 477.5
151	Arrowhead		Cu/Cu alloy	4.8	1.8			Settlement	MBA		Özgüç T. 1986, pl. 129.8; Gernez 2007c, pl.477.6
152	Arrowhead		Cu/Cu alloy	5.2	1.8			Settlement	MBA		Özgüç, T. 1986, pl. 129.7; Gernez 2007c, pl.477.7
153	Trident		Cu/Cu alloy	70.2	13		2		Karum II/Ib	3 points, weapon, unique in Anatolia	Özgüç, T. 1959, Fig.63; Pl.XLIX, 11
154	Trident	Kt.ş/K64	Cu/Cu alloy	29	11.5		1	tomb	Karum Ib	2 points, Ankara	Özgüç, T. 1986, Pl.128, 7
155	Trident	Kt.h/K14	Cu/Cu alloy	30.6	10.1		1	tomb	Karum Ib	2 points, Ankara	Özgüç, T. 1986, Pl.128, 8
733	Trident		Cu/Cu alloy	41	10		1	Settlement	Karum II	2 points	Özgüç, T. 1986, Pl.128, 9
156	Vessel		Cu/Cu alloy					tomb	Karum II/Ib	tomb gift	Özgüç, T. 1959, Fig.85
157	Vessel		Cu/Cu alloy					tomb	Karum II/Ib	tomb gift	Özgüç, T. 1959, Fig.86
158	Vessel		Cu/Cu alloy					tomb	Karum II/Ib	tomb gift	Özgüç, T. 1959, Fig.87
159	Vessel		Cu/Cu alloy					tomb	Karum II/Ib	tomb gift	Özgüç, T. 1959, Fig.88
160	Vessel		Cu/Cu alloy					tomb	Karum II/Ib	tomb gift	Özgüç, T. 1959, Fig.89
161	Vessel		Cu/Cu alloy					tomb	Karum II/Ib	tomb gift	Özgüç, T. 1959, Fig.90
162	Vessel		Cu/Cu alloy					tomb	Karum II/Ib	tomb gift	Özgüç, T. 1959, Fig.91
163	Bowl		Cu/Cu alloy					tomb	Karum Ib	no illustration, popular in Phrygians	Özgüç, T. 1959, p.109
164	Bowl		Cu/Cu alloy						Karum II/Ib	a wide flat rim	Özgüç, T. 1986, Pl.126, 2; Fig.55
165	Bowl	Kt.m/t 277	Cu/Cu alloy	3	13			palace	Karum Ib/Mound Lev.7	found in grid CV/85, Ankara	Özgüç, T. 1999 p.122,5; Fig. D.4
166	Cup	Kt.m/t 276	Cu/Cu alloy	10.2	12.5			palace	Karum Ib/Mound Lev.7	cup with two handles, found in grid CV/85, Ankara	Özgüç, T. 1999 p.122,7; Pl. 102; Fig. D.5
167	Goblet		Cu/Cu alloy					palace	Karum Ib/Mound Lev.7	with a pedestal, found in CII/83 on the floor, mound storage	Özgüç, T. 1999 p.127; Fig. E.16
168	Pan		Cu/Cu alloy					tomb	Karum II	with a long handle, first occurrence in the site	Özgüç, T. 1959, Fig.61; Pl.XLVIII, 6
169	Bucket		Cu/Cu alloy					tomb	Karum Ib	with basket-handle	Özgüç, T. 1959, Fig.60; Pl.XLVIII, 5
170	Spool	Kt.c/K184	Cu/Cu alloy	8.8	7.2			tomb	Karum Ib	comes from Mesopotamia	Özgüç, T. 1986, Pl.124, 16
171	Spool	Kt.n/K131	Cu/Cu alloy	9.5	5			tomb	Karum Ib	comes from Mesopotamia	Özgüç, T. 1986, Pl.124, 17
172	Spool	Kt.v/K179	Cu/Cu alloy	10.8	8.6			tomb	Karum Ib	tomb gift, cist-grave, comes from Mesopotamia,	Özgüç, T. 1986, Pl.96, 4a-b
173	Pin		Cu/Cu alloy				5	tomb	Karum II/Ib	cylindical head, imported by the foreign merchants	Özgüç, T. 1959, Fig.75; Pl.L, 2
174	Pin		Cu/Cu alloy				5	tomb	Karum II/Ib	imported by the foreign merchants	Özgüç, T. 1959, Fig.76; Pl.L, 3
175	Pin	Kt.k/42	Cu/Cu alloy	0.8	0.7			tomb	Karum Ib	top part of a gold plated bronze pin, rare occurrence, Ankara	Özgüç, T. 1986, Pl.70, 8a-b
176	Pin	Kt.t/K41	Cu/Cu alloy	0.3				tomb	Karum Ib	with a ring of granulation, Ankara	Özgüç, T. 1986, Pl.70, 9
177	Pin	Kt.j/K147	Cu/Cu alloy	10			5	tomb	Karum Ib	Ankara	Özgüç, T. 1986, Pl.125, 1
178	Pin	Kt.k/K163	Cu/Cu alloy	6.6			5	tomb	Karum Ib	Ankara	Özgüç, T. 1986, Pl.125, 2
179	Pin	Kt.j/K148	Cu/Cu alloy	7.7			5	tomb	Karum Ib	Ankara	Özgüç, T. 1986, Pl.125, 3
180	Pin	Kt.g/K158	Cu/Cu alloy				5	tomb	Karum Ib	Ankara	Özgüç, T. 1986, Pl.125, 4
181	Pin	Kt.h/K29	Cu/Cu alloy	16.4			5	tomb	Karum Ib	Ankara	Özgüç, T. 1986, Pl.125, 5
182	Pin	Kt.g/K157	Cu/Cu alloy				5	tomb	Karum Ib	Ankara, with eyelet in the middle of pin	Özgüç, T. 1986, Pl.125, 6
183	Pin	Kt.h/K90	Cu/Cu alloy	7.5			5	tomb	Karum Ib	Ankara, with eyelet in the middle of pin	Özgüç, T. 1986, Pl.125, 7
184	Pin	Kt.c/K164	Cu/Cu alloy	4.8			4	tomb	Karum Ib	segmented head,tomb gift, Ankara	Özgüç, T. 1986, Pl.125, 8
185	Pin	Kt.b/K294	Cu/Cu alloy	6.9			4	tomb	Karum Ib	tomb gift, Ankara	Özgüç, T. 1986, Pl.125, 9
186	Pin	Kt.77/K97	Cu/Cu alloy	10.7			4	tomb	Karum Ib	tomb gift, Kayseri, with eyelet in the middle of pin	Özgüç, T. 1986, Pl.125, 10
187	Pin	Kt.f/K387	Cu/Cu alloy	15			5	tomb	Karum Ib	Ankara, imported from Syria	Özgüç, T. 1986, Pl.125, 11
188	Pin	Kt.f/K388	Cu/Cu alloy	13.5			5	tomb	Karum Ib	Ankara, imported from Syria	Özgüç, T. 1986, Pl.125, 12
189	Pin	Kt.81/K30	Cu/Cu alloy	14.7			4	tomb	Karum Ib	tomb gift, Kayseri, imported from Syria, with eyelet in the middle of pin	Özgüç, T. 1986, Pl.125, 13
190	Pin	Kt.f/K389	Cu/Cu alloy	17.7			4	tomb	Karum Ib	tomb gift, Ankara	Özgüç, T. 1986, Pl.125, 14

Consecutive No.	Class	Kültepe No.	Classify	Length(cm)	Diameter/Width(cm)	Thickness(cm)	Type	Context	Period	Remarks	References
191	Pin	Kt.81/K36	Cu/Cu alloy	7.5			4	tomb	Karum Ib	branched into two heads, tomb gift, Kayseri	Özgüç, T. 1986, Pl.125, 15
192	Pin	Kt.82/K166	Cu/Cu alloy	6.1			5	tomb	Karum Ib	Kayseri	Özgüç, T. 1986, Pl.125, 16
193	Pin	Kt.v/K178	Cu/Cu alloy	8.5			4	tomb	Karum II	local type, Ankara	Özgüç, T. 1986, Pl.125, 17
194	Pin	Kt.b/K141	Cu/Cu alloy	7.2			4	tomb	Karum II	local type, Ankara	Özgüç, T. 1986, Pl.125, 18
195	Pin	Kt.f/T370	Cu/Cu alloy	10.5			4	tomb	Karum II	local type, Ankara	Özgüç, T. 1986, Pl.125, 19
196	Pin	Kt.h/K26	Cu/Cu alloy	6.7			4	tomb	Karum II	local type, Ankara, with eyelet in the middle of pin	Özgüç, T. 1986, Pl.125, 20
197	Pin	Kt.f/K343	Cu/Cu alloy	7.3			4	tomb	Karum II	local type, Ankara	Özgüç, T. 1986, Pl.125, 21
198	Ring	Kt.84/K159	Cu/Cu alloy		1.8			tomb	Karum II	Carnelian on bronze earring, only type in the site, Kayseri	Özgüç, T. 1986, Pl.H, 18
199	Ring		Cu/Cu alloy					tomb	Karum II/Ib	stone weight with bronze ring	Özgüç, T. 1986, Fig.56
200	Ring	Kt.h/K10	Cu/Cu alloy		1.4			tomb	Karum Ib	earring, gold-plated on bronze, Ankara	Özgüç, T. 1986, Pl.67, 27
201	Ring	Kt.77/K96	Cu/Cu alloy		2.3			tomb	Karum Ib	earring, gold-plated on bronze, Kayseri	Özgüç, T. 1986, Pl.67, 28
202	Bracelet	Kt.k/K166	Cu/Cu alloy		6				Karum II/Ib	wrapped in silver wire, no parallel in the period, Ankara	Özgüç, T. 1986, Pl.69, 4
203	Bracelet	Kt.81/K26	Cu/Cu alloy		6.2			tomb	Karum Ib	folding over a thin sheet of silver, Kayseri	Özgüç, T. 1986, Pl.69, 5
204	Bracelet	Kt.81/K27	Cu/Cu alloy		5.8			tomb	Karum Ib	folding over a thin sheet of silver, Kayseri	Özgüç, T. 1986, Pl.69, 6
205	Bracelet	Kt.j/K150	Cu/Cu alloy and silver		6.4				Karum II/Ib	both ends in animal head, rare type in the site, Ankara	Özgüç, T. 1986, Pl.95, 9
734	Stamp		Terracotta	1.9	1.5				Karum II	consecutive the head of birds	Özgüç, N. 1968, Pl. XXXVII, 1a–b
735	Bulla		Clay	1.4	2.8				Old Hittite	consecutive the head of birds, H: 3.4cm	Özgüç, N. 1968, Pl. XXXVII, 5
206	Scepter		Cu/Cu alloy	4	2			palace	Karum Ib/Mound Lev.7	with oval top, found in CII/83 on the floor, mound storage	Özgüç, T. 1999 p.127; Fig. E.14
207	Breast covers		Cu/Cu alloy		8.3			tomb	Karum II/Ib	pithos burials	Özgüç, T. and Özgüç, N. 1953: 196
208	Belt buckles	Kt.f/K8	Cu/Cu alloy					tomb	Karum II/Ib	Ankara	Özgüç, T. 1986
209	Belt buckles	Kt.84/K141	Cu/Cu alloy	9.5	6.4			tomb	Karum II/Ib	Kayseri	Özgüç, T. 1986, Pl.124, 18
210	Round piece	Kt.j/K162	Cu/Cu alloy		7				Karum II/Ib	with small holes near the edges, Ankara	Özgüç, T. 1986, Pl.66, 1
211	Round piece	Kt.j/K163	Cu/Cu alloy		7				Karum II/Ib	with small holes near the edges, Ankara	Özgüç, T. 1986, Pl.66, 2
212	Mould		Stone					workshop	Karum Ib	axe	Özgüç, T. 1986, Pl.A, 2: Pl.79, 3
213	Mould		Stone	7.7	4.5			Settlement	Karum II	axe, multiple objects	Özgüç, T. 1986, Pl.79, 10a
214	Mould		Stone	11.2	6.5	3.5	1	workshop	Karum II	Workshop Room 1, Kayseri, fenestrated axe	Özgüç, T. 1986, Pl.86, 2a–b
215	Mould	Kt.82/K200	Stone	16	8.65	3.3	2a	workshop	Karum II	Workshop Room 2 or workshop 7?, Kayseri, shaft hole axe	Özgüç, T. 1986, Pl.87, 1a–b
216	Mould	Kt.82/K203-204	Stone	9.3	4.5	2.3	2a	workshop	Karum II	Workshop Room 2 or workshop 7?, Kayseri, shaft hole axe	Özgüç, T. 1986, Pl.87, 3a–b
217	Mould			27.5	14.7			workshop	Karum Ib	Axe, chisel	Erkanal 1977, p.3 entry 4, pl.1.4; Deshayes 1960, 1086
218	Mould		Stone	8.2	9.6		2b	workshop	Karum Ib	Room 1, flat axes	Erkanal 1977, p.3, entry 5, pl.1.5; Müller-Karpe 1994, p.204, pl.33.2
219	Mould							workshop	Karum Ib		Özgüç, T. 2003, p.249, Fig.266
220	Mould			9	6			Settlement	Karum Ib		Müller-Karpe 1994, p.198, pl.16.5; Özgüç, T. 1986, p.45, Pl.92.3
221	Mould			9.9	3.3			workshop	Karum II	workshop 7?, round ingot	Müller-Karpe 1994, p.199, pl.20.4; Özgüç, T. 1986, p.41, Pl.86.3
222	Mould		Stone	8.9	8.2			workshop	Karum II	workshop 7?, round ingot	Müller-Karpe 1994, p.200, pl.20.6
223	Mould		Stone	10.5	7.4			Settlement	Karum Ib	bars, blade	Müller-Karpe 1994, p.200, pl.21.2; Özgüç, T. 1986, p.45, Pl.91, 7a.b
224	Mould			29	17.5			Settlement	Karum Ib	long chisel	Müller-Karpe 1994, p.201, pl.25.2; Özgüç, T. 1986, p.45, Pl.91.3
225	Mould		Stone	11.4	9.4			workshop	Karum Ib	Room 1, multi-sided	Müller-Karpe 1994, pp.203-4, pl.31.3; Özgüç, T. 1986, p.39, Pl.80.3.8
226	Mould		Stone	16.5	5.2			Settlement	MBA	rasp/file	Müller-Karpe 1994, p.205, pl.35.2; Özgüç, T. 1986, p.45, Pl.91.1a.b
227	Mould		Stone	28.2	10.6			Settlement	Karum II	rasp/file	Müller-Karpe 1994, p.205, pl.35.4; Özgüç, T. 1986, p.44, Pl.90.5a–d
228	Mould		Stone	8.5	6.9			workshop	MBA	Room 1	Müller-Karpe 1994, p.206, pl.37.1
229	Mould			9.3	6.7			workshop	Karum Ib	Room 1, bars	Müller-Karpe 1994, p.206, pl.37.3; Özgüç, T. 1986, p.45, Pl.92, 4
230	Mould		Stone	13	9.75			workshop	Karum II	workshop 7?	Müller-Karpe 1994, p.206, pl.38.3; Özgüç, T. 1986, p.42, Pl.86.4
231	Mould			14.6	9.9			workshop	Karum II	workshop 7?	Müller-Karpe 1994, p.207, pl.38.4; Özgüç, T. 1986, p.42, Pl.86.5
232	Mould			11.7	6.2			workshop	Karum II	workshop 7?	Müller-Karpe 1994, p.207, pl.38.5; Özgüç, T. 1986, p.42
233	Mould			12.8	8.7			workshop	Karum II	workshop 7?	Müller-Karpe 1994, p.207, pl.38.6; Özgüç, T. 1986, p.42, Pl.86.6
234	Mould		Stone	8.7	5.8			Settlement	Karum		Müller-Karpe 1994, p.207, pl.39.1

Consecutive No.	Class	Kültepe No.	Classify	Length(cm)	Diameter/Width(cm)	Thickness(cm)	Type	Context	Period	Remarks	References
235	Mould		Stone	6.3	5.3			Settlement	MBA		Müller-Karpe 1994, p.207, pl.39.3
236	Mould		Stone	15.4	9.3			workshop	Karum Ib	Room 1	Müller-Karpe 1994, p.207, pl.39.6; Özgüç, T. 1986, p.39, Pl.80.5
237	Mould		Stone	12.4	11.7			Settlement	MBA		Müller-Karpe 1994, p.208, pl.40.7
238	Mould		Stone	16.8	7		2a	Settlement	Karum Ib	shaft hole axe	Müller-Karpe 1994, p.209, pl.44.1; Özgüç, T. 1986, p.43, Pl.89.1, 91.4-6, 92.2
239	Mould			21.9	9.15		2a	Settlement	Karum II	shaft hole axe	Müller-Karpe 1994, p.210, pl.45.1; Özgüç, T. 1986, p.43, Pl.88.8b
240	Mould		Stone	7.8	5.9			Settlement	MBA		Müller-Karpe 1994, p.210, pl.46.1
241	Mould						2a	workshop	Karum II	workshop 7?, shaft hole axe	Müller-Karpe 1994, p.210, pl.46.3; Özgüç, T. 1986, p.42, Pl.87.3b
242	Mould			19.5	4.45		2b	Settlement	Karum II	Double axe	Müller-Karpe 1994, p.211, pl.48.3
243	Mould		Stone					workshop	Karum II	workshop 7?, weapons	Müller-Karpe 1994, p.212, pl.50.1.2; Özgüç, T. 1986, p.42, Pl.87.2
244	Mould		Stone	11.65	9.1		2b	workshop	MBA	Room 1, flat axe	Müller-Karpe 1994, p.212, pl.50.3; Özgüç, T. 1986, p.39, Pl.80, 4.6
245	Mould		Stone	7.55	6.5			Settlement	Karum Ib	ornament	Müller-Karpe 1994, p.213, pl.51.1; Özgüç, T. 1986, p.45, Pl.92.1
246	Mould			11	7			workshop	Karum Ib	Room 1, ornament	Müller-Karpe 1994, p.215, pl.53.8; Özgüç, T. 1986, p.39, Pl.80.7
247	Mould			11.5	7.5			workshop	Karum Ib	Room 1, ornament	Müller-Karpe 1994, p.215, pl.53.9; Özgüç, T. 1986, p.39, Pl.80.7
248	Mould			5.4	4.75			Settlement	MBA	ring ornament	Müller-Karpe 1994, pp.215-216, pl.54.2
249	Mould			9	4.5			Settlement	Karum II	ornament	Müller-Karpe 1994, pp.216-217, pl.55.2
250	Mould		Stone	5.3	4.65			workshop	Karum II	Room 1, ornament	Müller-Karpe 1994, p.217, pl.55.3; Özgüç, T. 1986, p.42, Pl.87.4
251	Mould		Stone	3.1	3.6			Settlement	MBA	ornament	Müller-Karpe 1994, p.217, pl.55.7; Özgüç, T. 1986, p.45, Pl.91.9
252	Mould		Stone	8.8	4.8			Settlement	MBA	ornament	Müller-Karpe 1994, p.217, pl.55.8; Özgüç, T. 1986, p.45, Pl.91.9
253	Mould			3.67	1.75			Settlement	Karum Ib	small objects	Müller-Karpe 1994, p.220, pl.58.1; Özgüç, T. 1986, p.45, Pl.91.8
254	Mould			8	3.6			workshop	Karum II	workshop 7?	Müller-Karpe 1994, p.220, pl.58.2; Özgüç, T. 1986, p.42, Pl.87.5
255	Mould		Stone	3.9	3.4			workshop	Karum II	workshop 7?, cup?	Müller-Karpe 1994, p.220, pl.58.4; Özgüç, T. 1986, p.42, Pl.91.11
256	Mould		Stone	7.6	4.9			Settlement	Karum Ib	axe	Müller-Karpe 1994, p.220, pl.58.7
257	Mould							workshop	Karum II	workshop 7?	Müller-Karpe 1994, p.221, pl.58.8.9; Özgüç, T. 1986, p.42, Pl.88.6
258	Mould			3.5	3.45			workshop	Karum II	workshop 7?, ornament	Müller-Karpe 1994, p.221, pl.59.3; Özgüç, T. 1986, p.42, Pl.88.2
259	Mould		Stone	5.3	4.2			Settlement	Karum	ornament	Müller-Karpe 1994, pl.59.5
260	Mould		Stone	13	11		1	workshop	Karum II	fenestrated axe	Müller-Karpe 1994, p.221, pl.48.5; Özgüç, T. 1986, p.44, Pl.89.4, 90.1

Table 4.7. List of bronze artefacts from other sites in Anatolia.

Consecutive No.	Site	Class	Classify	Length(cm)	Width(cm)	Type	Context	Period	Remarks	References
566	Acem Höyük	Axe	Cu/Cu alloy	20.3	6.9	2b	Burial	MBA	trunnion/lugged, Level 2, burial/pithos grave	Erkanal 1977, p.3 entry 8, Pl. 1.8; Blackwell 2011, p.629
567	Acem Höyük	Axe	Cu/Cu alloy	13.4	5.8	2a	Palace	MBA	shaft hole, Level 3	Erkanal 1977, p.15 entry 57, pl. 5.57; Blackwell 2011, p.629
568	Acem Höyük	Axe	Cu/Cu alloy	12.8	7	2a	Palace	MBA	shaft hole, Level 3	Erkanal 1977, p.15 entry 58, pl. 5.58; Blackwell 2011, p.629
569	Acem Höyük	Axe	Cu/Cu alloy	16.8	5.4	2a	Settlement	MBA	shaft hole, Level 3	Erkanal 1977, p.18 entry 63, pl. 6.63; Blackwell 2011, p.629
570	Acem Höyük	Axe	Cu/Cu alloy	11.75	5.75	1	Palace	MBA	shaft hole, fenestrated, Level 3	Erkanal 1977, p.22 entry 70, pl. 6.70; Blackwell 2011, p.629
571	Alaca Höyük	Axe	Cu/Cu alloy			2b	Settlement	MBA	single flat axe, Level II	Deshayes 1960, 472; Blackwell 2011, p.629
572	Alaca Höyük	Chisel	Cu/Cu alloy	7.3	1.3		Settlement	MBA		Müller-Karpe 1994, p.228, pl. 65.5; Blackwell 2011, p.629
573	Alaca Höyük	Chisel	Cu/Cu alloy	10	1.9		Settlement	MBA		Müller-Karpe 1994, p.228, pl. 65.8; Blackwell 2011, p.629
574	Alaca Höyük	Chisel	Cu/Cu alloy	3.3	0.45		Settlement	MBA		Müller-Karpe 1994, p.229, pl.65.13; Blackwell 2011, p.629
575	Alaca Höyük	Chisel	Cu/Cu alloy	5.2	0.75		Settlement	MBA		Müller-Karpe 1994, p.229, pl.65.14; Blackwell 2011, p.629
576	Alaca Höyük	Chisel	Cu/Cu alloy	11.8	0.9		Settlement	MBA	socketed, Level II-I a/b	Müller-Karpe 1994, p.246, pl.75.24; Blackwell 2011, p.629
577	Beycesultan	Awl	Cu/Cu alloy	11.55	0.2		Settlement	MBA	Level 4b	Blackwell 2011, p.631
578	Beycesultan	Awl	Cu/Cu alloy	12.3	0.4		Settlement	MBA	Level 5	Blackwell 2011, p.631
579	Beycesultan	Awl	Cu/Cu alloy	4.4	0.4		Settlement	MBA	Level 4b	Blackwell 2011, p.631
580	Beycesultan	Awl/Drill	Cu/Cu alloy	10.9	0.15		Settlement	MBA	Level 5	Blackwell 2011, p.631
581	Beycesultan	Axe	Cu/Cu alloy			2b	Settlement	MBA	trunnion/lugged, Level 5	Blackwell 2011, p.631
582	Beycesultan	Axe	Cu/Cu alloy			2b	Settlement	MBA	trunnion/lugged, Level 4a	Blackwell 2011, p.631
583	Beycesultan	Axe	Cu/Cu alloy	16.3	4.3	2b	Settlement	MBA	trunnion/lugged, Level 4	Erkanal 1977, p.7, entry 43, pl.4.43; Blackwell 2011, p.631
584	Beycesultan	Axe	Cu/Cu alloy	18.1	4.85	2b	Settlement	MBA	trunnion/lugged, Level 4	Deshayes 1960, 1046; Erkanal 1977, p.7, entry 42, pl.4.42; Blackwell 2011, p.631
585	Beycesultan	Axe	Cu/Cu alloy	11	3.35	2b	Settlement	MBA	single/flat or razor, Level 4a	Blackwell 2011, p.631
586	Beycesultan	Chisel	Cu/Cu alloy	9.7	0.8		Settlement	MBA	Level 5	Blackwell 2011, p.631
587	Beycesultan	Chisel	Cu/Cu alloy	4.7	0.45		Settlement	MBA	tanged, Level 5	Blackwell 2011, p.631
588	Beycesultan	Chisel	Cu/Cu alloy	11.5	0.8		Settlement	MBA	Level 5	Blackwell 2011, p.631
589	Beycesultan	Chisel	Cu/Cu alloy	11.95	0.55		Settlement	MBA	Level 5	Blackwell 2011, p.631
590	Beycesultan	Chisel	Cu/Cu alloy	9	0.3		Settlement	MBA	Level 4b	Blackwell 2011, p.631
591	Beycesultan	Chisel	Cu/Cu alloy	8.05	0.6		Settlement	MBA	socketed, Level 5	Blackwell 2011, p.631
592	Beycesultan	Chisel	Cu/Cu alloy	14.9	0.6		Settlement	MBA	Level 5	Deshayes 1960, 29; Blackwell 2011, p.631
593	Kusura	Awl	Cu/Cu alloy				Settlement	MBA	1900-1200BC	Deshayes 1960, 41; Blackwell 2011, p.646
594	Kusura	Awl	Cu/Cu alloy				Settlement	MBA	1900-1200BC	Deshayes 1960, 88; Blackwell 2011, p.646
595	Kusura	Awl	Cu/Cu alloy				Settlement	MBA	Level C	Deshayes 1960, 105; Blackwell 2011, p.646
596	Kusura	Axe	Cu/Cu alloy			2b	Settlement	MBA	2000-1200BC, Level C, single/flat axe	Deshayes 1960, 500; Blackwell 2011, p.646
597	Kusura	Chisel frag.	Cu/Cu alloy	3.3	1.8		Settlement	MBA	period C, 1900-1600BC?	Müller-Karpe 1994, p.241, pl. 72.34; Blackwell 2011, p.646
598	Kusura	Chisel	Cu/Cu alloy				Settlement	MBA	period C, 1900-1600BC?	Blackwell 2011, p.646
599	Kusura	Chisel	Cu/Cu alloy				Settlement	MBA	start of 2nd millunnium BC	Deshayes 1960, 908; Blackwell 2011, p.646
600	Kusura	Chisel	Cu/Cu alloy				Settlement	MBA	2000-1200BC, Level C	Deshayes 1960, 852; Blackwell 2011, p.646
601	Kusura	Knife	Cu/Cu alloy				Settlement	MBA	1900-1600BC, Level C	Deshayes 1960, 2408; Blackwell 2011, p.646
602	Lidar	Mould		17.5	14.6		Settlement	MBA	bar ingots	Müller-Karpe 1994, pp.197-8, pl. 15.8; Blackwell 2011, p.646
603	Lidar	Mould	Stone	22.5	19.5		Settlement	MBA	weapons	Müller-Karpe 1994, p.198, pl. 16.1; Blackwell 2011, p.646
604	Lidar	Mould		24.9	12.5		Settlement	MBA	weapons	Müller-Karpe 1994, p.198, pl. 16.6; Blackwell 2011, p.646
605	Lidar	Mould	Stone	17.8	10.7		Settlement	MBA	axes	Müller-Karpe 1994, p.198, pl. 17.5; Blackwell 2011, p.646
606	Lidar	Mould	Stone	8.6	10		Settlement	MBA	axes, Level 9	Müller-Karpe 1994, p.202, pl. 26.4; Blackwell 2011, p.646
607	Lidar	Mould		19.4	11.8	2a	Settlement	MBA	shaft hole axe	Müller-Karpe 1994, p.210, pl. 46.4; Blackwell 2011, p.646

Consecutive No.	Site	Class	Classify	Length(cm)	Width(cm)	Type	Context	Period	Remarks	References
608	Mersin	Awl	Cu/Cu alloy				Settlement	MBA	1900–1700BC	Deshayes 1960, 106; Blackwell 2011, p.646
609	Mersin	Chisel	Cu/Cu alloy	14.3	0.5		Settlement	MBA	room 117, 1900–1700BC, Level X	Müller–Karpe 1994, p.239, pl. 71.49; Deshayes 1960, 910; Blackwell 2011, p.646
610	Mersin	Chisel	Cu/Cu alloy	8.8	1.6		Settlement	MBA	1900–1700BC, Level X	Müller–Karpe 1994, p.242, pl. 73.2; Deshayes 1960, 951; Blackwell 2011, p.647
611	Tarsus	Awl	Cu/Cu alloy				Settlement	MBA	1900–1650BC	Deshayes 1960, 157; Blackwell 2011, p.649
612	Tarsus	Awl/Drill	Cu/Cu alloy	9	0.3		Settlement	MBA		Müller–Karpe 1994, p.246, pl. 75.22; Blackwell 2011, p.649
613	Tarsus	Axe	Cu/Cu alloy			2a	Settlement	MBA	1900–1650BC, shaft hole axe	Deshayes 1960, 1818; Blackwell 2011, p.649
614	Tarsus	Chisel	Cu/Cu alloy				Settlement	MBA	1900–1600BC	Deshayes 1960, 781; Blackwell 2011, p.649
615	Tarsus	Mould		21.5	16		Settlement	MBA	dagger, chisel	Müller–Karpe 1994, p.202, pl. 26.3; Blackwell 2011, p.649
616	Tarsus	Mould		15.9	12.3		Settlement	MBA	room 32, many items	Müller–Karpe 1994, p.200, pl. 22.1; Blackwell 2011, p.649
617	Tarsus	Mould		23.6	11.3		Settlement	MBA	room 33	Blackwell 2011, p.649
618	Tarsus	Mould		11.1			Settlement	MBA	room 22	Blackwell 2011, p.649
619	Tarsus	Mould		8.1	6.8		Settlement	MBA	room 19	Blackwell 2011, p.649
620	Tell Achana or Alalakh	Axe	Cu/Cu alloy			2b	Settlement	MBA	Level XVI, single/flat axe	Deshayes 1960, 564; Blackwell 2011, p.650
621	Tell Achana or Alalakh	Axe	Cu/Cu alloy			2b	Settlement	MBA	Level XIV, single/flat axe	Deshayes 1960, 396; Blackwell 2011, p. 650
622	Tell Achana or Alalakh	Mould		3.3	2.35	2a	Cultic site	MBA	Level XIV, temple, shaft hole axe	Müller–Karpe 1994, p.218, pl. 56.3; Blackwell 2011, p.650
623	Hirbemerdon Tepe	Mould	Stone	13.5	7.2	2a	Workshop	MBA	Phase IIIB (1950–1750BC), Steatite, H: 4.1cm, shaft hole axe, HM 1118	Massimino 2013: Plate I
624	Hirbemerdon Tepe	Mould	Baked Clay	9.5	9.1	2b	Workshop	MBA	Phase IIIB, H: 4cm, single/flat axe?, HM 3248	Massimino 2013: Plate II
625	Hirbemerdon Tepe	Mould	Stone	11.9	7.2		Workshop	MBA	Phase IIIB, Sandstone, H: 4.1cm, bars, HM 1216	Massimino 2013: Plate III
626	Hirbemerdon Tepe	Mould	Stone	10	9.5		Workshop	MBA	Phase IIIB, Sandstone, H: 2.5cm, round items?, HM 3428	Massimino 2013: Plate IV
627	Hirbemerdon Tepe	Mould	Stone	24	18		Workshop	MBA	Phase IIIB, Limestone, H: 7.4cm, bars, daggers, crescent items?, HM 2941	Massimino 2013: Plate V
628	Hirbemerdon Tepe	Mould	Baked Clay	16	10		Workshop	MBA	Phase IIIB, H: 7.5cm, daggers, bars?, HM 5257	Massimino 2013: Plate VI
629	Hirbemerdon Tepe	Mould	Baked Clay	17	16		Workshop	MBA	Phase IIIB, H: 7cm, HM 5444	Massimino 2013: Plate VII
630	Hirbemerdon Tepe	Mould	Stone	24	19		Workshop	MBA	Phase IIIB, Basalt, H: 17cm, sickle, axe , HM 5389	Massimino 2013: Plate VIII
631	Hirbemerdon Tepe	Mould	Baked Clay	32	11		Workshop	MBA	Phase IIIB, H: 7.5cm, dagger, HM 5930	Massimino 2013: Plate IX
632	Troy	Awl	Cu/Cu alloy				Settlement	MBA	BC1750?	Deshayes 1960, 49; Blackwell 2011, p.651
633	Troy	Axe	Cu/Cu alloy			2b	Settlement	MBA	Level II–V, single/flat axe	Deshayes 1960, 505; Blackwell 2011, p.651
634	Troy	Axe	Cu/Cu alloy			2b	Settlement	MBA	2000–1750BC, single/flat axe	Deshayes 1960, 468; Blackwell 2011, p.651
635	Troy	Axe	Cu/Cu alloy			2b	Settlement	MBA	2000–1750BC, single/flat axe	Deshayes 1960, 484; Blackwell 2011, p. 652
636	Troy	Awl/Drill	Cu/Cu alloy				Settlement	MBA	Troy II–V	Blackwell 2011, p.652
637	Troy	Awl/Drill	Cu/Cu alloy				Settlement	MBA	Troy II–V	Blackwell 2011, p.652
638	Troy	Awl/Drill	Cu/Cu alloy				Settlement	MBA	Troy II–V	Blackwell 2011, p.652
639	Troy	Awl/Drill	Cu/Cu alloy				Settlement	MBA	Troy II–V	Blackwell 2011, p.652
640	Troy	Awl/Drill	Cu/Cu alloy				Settlement	MBA	Troy II–V	Blackwell 2011, p.652
641	Troy	Awl/Drill	Cu/Cu alloy				Settlement	MBA	Troy II–V	Blackwell 2011, p.652
642	Troy	Chisel	Cu/Cu alloy	37.5	2.7		Settlement	MBA	Troy II–V	Müller–Karpe 1994, p.233, pl. 69.1; Blackwell 2011, p.652
643	Troy	Chisel	Cu/Cu alloy	23.5	1		Settlement	MBA	Troy II–V	Müller–Karpe 1994, p.233, pl. 69.2; Blackwell 2011, p.652
644	Troy	Chisel	Cu/Cu alloy	10.3	1		Settlement	MBA	Troy II–V	Müller–Karpe 1994, p.240, pl. 72.24; Blackwell 2011, p.652
645	Troy	Chisel	Cu/Cu alloy	14.5	0.5		Settlement	MBA	Troy II–V	Müller–Karpe 1994, p.229, pl. 65.17; Blackwell 2011, p.652
646	Troy	Chisel	Cu/Cu alloy	10	0.6		Settlement	MBA	Troy II–V	Deshayes 1960, 915; Blackwell 2011, p.652
647	Troy	Chisel	Cu/Cu alloy				Settlement	MBA	Troy II–V	Deshayes 1960, 849; Blackwell 2011, p. 652
648	Troy	Chisel	Cu/Cu alloy				Settlement	MBA	Troy III	Blackwell 2011, p.652

Consecutive No.	Site	Class	Classify	Length(cm)	Width(cm)	Type	Context	Period	Remarks	References
649	Troy	Chisel	Cu/Cu alloy				Settlement	MBA	Troy II–V	Blackwell 2011, p.652
650	Troy	Chisel	Cu/Cu alloy				Settlement	MBA	Troy II–V	Blackwell 2011, p.652
651	Troy	Chisel	Cu/Cu alloy				Settlement	MBA	Troy II–V	Blackwell 2011, p.652
652	Troy	Chisel	Cu/Cu alloy				Settlement	MBA	Troy II–V	Blackwell 2011, p.652
653	Troy	Chisel	Cu/Cu alloy				Settlement	MBA	Troy II–V	Blackwell 2011, p.652
654	Troy	Chisel	Cu/Cu alloy				Settlement	MBA	Troy II–V	Blackwell 2011, p.652
655	Troy	Chisel	Cu/Cu alloy				Settlement	MBA	Troy II–V	Blackwell 2011, p.652
656	Troy	Chisel	Cu/Cu alloy				Settlement	MBA	Troy II–V	Blackwell 2011, p.652
657	Troy	Chisel	Cu/Cu alloy	20.5	2.1		Settlement	MBA	2000–1750BC, Gouge	Deshayes 1960, 1030; Blackwell 2011, p. 652
658	Troy	Knife	Cu/Cu alloy	15	2.1		Settlement	MBA	2000–1750BC	Deshayes 1960, 2369; Blackwell 2011, p.652
659	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Deshayes 1960, 2350; Blackwell 2011, p. 652
660	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Deshayes 1960, 2351; Blackwell 2011, p.652
661	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Deshayes 1960, 2354; Blackwell 2011, p.652
662	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Deshayes 1960, 2354; Blackwell 2011, p.652
663	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Deshayes 1960, 2355; Blackwell 2011, p.652
664	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Deshayes 1960, 2355; Blackwell 2011, p.652
665	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Deshayes 1960, 2355; Blackwell 2011, p.652
666	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Deshayes 1960, 2355; Blackwell 2011, p.652
667	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Deshayes 1960, 2358; Blackwell 2011, p.652
668	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Deshayes 1960, 2358; Blackwell 2011, p.652
669	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Deshayes 1960, 2358; Blackwell 2011, p.652
670	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Blackwell 2011, p.652
671	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Blackwell 2011, p.652
672	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Blackwell 2011, p.652
673	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Blackwell 2011, p.652
674	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Blackwell 2011, p.652
675	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Blackwell 2011, p.652
676	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Blackwell 2011, p.652
677	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Blackwell 2011, p.652
678	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Blackwell 2011, p.652
679	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Blackwell 2011, p.653
680	Troy	Knife	Cu/Cu alloy				Settlement	MBA	2000–1750BC	Blackwell 2011, p.653
681	Troy	Saw with teeth	Cu/Cu alloy	27.5	5		Settlement	MBA	2000–1750BC	Deshayes 1960, 2881; Blackwell 2011, p.653
682	Troy	Saw with teeth	Cu/Cu alloy	21.1	5.5		Settlement	MBA	Troy II–V	Blackwell 2011, p.653
736	Yassı Höyük	Spearhead	Cu/Cu alloy			3	Palace	MBA	Room 27	*Japanese Institute of Anatolian Archaeology: Yassı Höyük*, 2013
737	Yassı Höyük	Trident	Cu/Cu alloy			1	Palace	MBA	Room 27	*Japanese Institute of Anatolian Archaeology: Yassı Höyük*, 2013
738	Yassı Höyük	Pin	Cu/Cu alloy			4	Palace	MBA	Room 8 (courtyard), segmented pin	*Japanese Institute of Anatolian Archaeology: Yassı Höyük*, 2013

4.3. Discussion

This section has shown the distribution of bronze artefacts. While to collect all the bronze artefacts deposited would obviously be impossible it is nevertheless possible to find general trends within the artefacts presented in this chapter. Unfortunately, a number of bronze objects were lacking in contextual information and thus do not feature in this research because this thesis focuses on the relationship between bronze artefacts and archaeological contexts. However, it is easy to understand the context from burial sites and tombs rather than the settlement contexts, because a number of bronze artefacts were found in burial sites and tombs.

This section contrasts the bronze artefacts from Kaman-Kalehöyük with those from central Anatolia more generally, and is divided into three topics: weapons, tools and personal items. It can be seen from the data in Table 4.8 that metal finds tend to come from three main types of context: burial site or tomb contexts, settlement (including palace and workshop) contexts and the destruction levels. The destruction level is a characteristic context at Kaman-Kalehöyük, and therefore it is necessary to consider it separately from the settlement contexts. For instance, metal finds from Kaman-Kalehöyük were mostly found in the destruction level. However, a few artefacts were found in the settlement contexts. Metalwork from Alishar Höyük was found in both burial site or tomb and settlement contexts, while that from Boğazköy was found only in settlement contexts. Metalwork from Kültepe was found in tombs, settlements, palaces and workshops.

4.3.1. Weapons

As regards finds of daggers from burial site or tombs in both Alishar Höyük and

Kültepe, four of the five types were found in Kültepe. Dagger Type 3 was not found in this site. In contrast, Type 3 was found only in Alishar Höyük. Even within the same context, dagger types are thus completely different between these sites. Moreover, more daggers were found in the tombs than in the palace from Kültepe, and only one dagger was found in the settlement (Type 1c), whereas Alishar Höyük all dagger types were found in the settlements. In Boğazköy, three of the five types were found. A number of daggers in three contexts are often shown in Types 1a, b and c. These types are common in central Anatolia, including in Kaman-Kalehöyük. Furthermore, the type of dagger found in the palace at Kültepe (Type 2) was not particular to that context, because the same type was also found in settlements at Alishar Höyük and Boğazköy. Spearheads may be compared across three types of context. In tombs at Kültepe only Type 1 spearheads were found. The same type was found in the settlement at Alishar Höyük and the destruction level at Kaman-Kalehöyük. However, there is only one spearhead in each site. In addition, one type was found in the settlement from Kaman-Kalehöyük (Type 2). The settlement was contemporary with the destruction level in this site but, in spite of this, this type was not found in the destruction level. However, two different types were found in the destruction level (Types 1a and 1b). Differences in the relationship between context and bronze artefact types are thus clear. A Type 3 spearhead was found in the palace at Kültepe. This type was also found in the settlement at Boğazköy. Fewer spearheads come from Boğazköy than from other sites. Axes are particularly noteworthy in that they were almost all found in Kültepe, and all types were found in the tombs there. Exceptionally, one Type 2b object that was found in the settlement at Boğazköy. In Kültepe the majority of bronze of Types 1 and 2a were excavated from the tombs, while three of the four types were found in the settlements. As a result, Type 2a belongs to both contexts. As a result, Types 1

and 2b are the particular type in each context, which suggests that these types are characteristic in Kültepe. Furthermore, only one axe-hammer was found in the tomb at Kültepe. In fact, this type has not commonly been found in other regions (Gernez 2007: III pls 209–10).

Table 4.8. Comparison of bronze finds at main sites in central Anatolia.

	Tomb/Burial Finds				Total	Settlement included Palace and Workshop Finds				Total	Destruction Level Finds	Total
Type	Kaman-Kalehöyük	Kültepe	Boğazköy	Alishar Höyük	Tombs	Kaman-Kalehöyük	Kültepe	Boğazköy	Alishar Höyük	Settlements	Kaman-Kalehöyük	Destruction Level
Dagger Type 1a	0	3	0	0	3	0	0	3	3	6	3	3
Type 1b	0	3	0	0	3	0	0	1	3	4	3	3
Type 1c	0	1	0	0	1	0	palace 1/ 1	0	1	3	1	1
Type 2	0	2	0	0	2	0	palace 1	1	1	3	0	0
Type 3	0	0	0	1	1	0	0	0	2	2	0	0
Spearhead Type 1a	0	6	0	0	6	0	0	0	1	1	1	1
Type 1b	0	0	0	0	0	0	0	1	1	2	3	3
Type 2	0	0	0	0	0	1	0	0	2	3	0	0
Type 3	0	0	0	0	0	0	palace 1	1	0	2	0	0
Axe Type 1	0	4	0	0	4	0	1	0	0	1	0	0
Type 2a	0	5	0	0	5	0	3	0	0	3	0	0
Type 2b	0	1	0	0	1	0	6	1	0	7	0	0
Type 3	0	1	0	0	1	0	0	0	0	0	0	0
Axe-Hammer	0	1	0	0	1	0	0	0	0	0	0	0
Arrowheads	0	1	0	0	1	0	6	2	1	9	0	0
Trident Type 1	0	0	0	0	0	0	1	0	0	1		
Type 2	0	2	0	0	2	0	0	0	0	0	0	0
Knives	0	0	0	0	0	0	2	6	1	9	0	0
Sickles	0	0	0	0	0	3	1	3	2	9	5	5
Awls	0	0	0	1	1	0	0	17	38	55	4	4
Chisels	0	0	0	0	0	0	2	5	0	7	0	0
Vessels	0	7	0	0	7	0	0	0	0	0	0	0
Bowls	0	1	0	0	1	0	palace 1	0	0	1	0	0
Cup	0	0	0	0	0	0	palace 1	0	0	1	0	0
Goblet	0	0	0	0	0	0	palace 1	0	0	1	0	0
Pan	0	1	0	0	1	0	0	0	0	0	0	0
Bucket	0	1	0	0	1	0	0	0	0	0	0	0
Spools	0	3	0	0	3	0	0	0	0	0	0	0
Socketed points	0	0	0	0	0	0	0	1	4	5	0	0
Spatula	0	0	0	0	0	0	0	0	1	1	0	0
Moulds	0	0	0	0	0	0	workshops 28/ 21	2	1	52	0	0

	Tomb/Burial Finds				Total	Settlement included Palace and Workshop Finds				Total	Destruction Level Finds	Total
Type	Kaman-Kalehöyük	Kültepe	Boğazköy	Alishar Höyük	Tombs	Kaman-Kalehöyük	Kültepe	Boğazköy	Alishar Höyük	Settlements	Kaman-Kalehöyük	Destruction Level
Pin Type 1	0	0	0	0	0	0	0	2	5	7	3	3
Type 2	0	0	0	0	0	0	0	5	9	14	6	6
Type 3	0	0	0	0	0	0	0	4	1	5	2	2
Type 4	0	11	0	1	12	0	0	28	9	37	3	3
Type 5	0	12	0	0	12	0	0	0	0	0	0	0
Type 6	0	0	0	0	0	0	0	15	8	23	0	0
Type 7	0	0	0	1	1	0	0	3	8	11	0	0
Type 8	0	0	0	0	0	0	0	2	1	3	0	0
Type 9	0	0	0	0	0	0	0	1	4	5	0	0
Type 10	0	0	0	0	0	0	0	0	4	4	0	0
Needles	0	0	0	0	0	0	0	34	12	46	2	2
Small rings	0	4	0	4	8	0	0	2	8	10	44	44
Bracelets/Anklets	0	2	0	0	2	0	0	5	3	8	0	0
Stamps	0	0	0	0	0	0	0	0	2	2	2	2
Tweezers	0	0	0	0	0	0	0	1	0	1	1	1
Sceptre	0	0	0	0	0	0	palace 1	0	0	1	0	0
Breast covers	0	1	0	0	1	0	0	0	0	0	0	0
Belt buckles	0	2	0	0	2	0	0	0	0	0	0	0

Arrowheads were probably used in daily life, because most arrowheads were found in settlements at Alishar Höyük, Boğazköy and Kültepe. The majority of arrowheads were found in Kültepe. Tridents were also a typical type in Kültepe and were found in the tombs and settlement. Another example was found in the palace at Yassı Höyük. These results suggest that they were perhaps associated with elites. However, the number of examples are few.

In summary, bronze weapons were often excavated in central Anatolia. Daggers were distributed across the various contexts. However, large amounts of bronze daggers were found in the settlement contexts. Only spearheads of Type 1a were found in burial contexts. However, all types were found in the settlement contexts. Additionally, two types of spearhead were found in the destruction level at Kaman-Kalehöyük. In contrast, axes were not found in the destruction level at Kaman-Kalehöyük. However, they were found in burial and settlement contexts. Arrowheads were only found in settlement contexts, whereas tridents were found in both burial and settlement contexts. Arrowheads and tridents were not found in the destruction level at Kaman-Kalehöyük.

4.3.2. Tools

Knives were found only in the settlements at Alishar Höyük, Boğazköy and Kültepe. The majority of knives were found in Boğazköy. Sickles were found in the settlements from Alishar Höyük, Boğazköy, Kaman-Kalehöyük and Kültepe. It seems that sickles were a common tool in central Anatolia. In addition, they were found in the destruction level at Kaman-Kalehöyük, meaning that it was probable that sickles were stored in a room from that context. In any event, a large number of sickles were excavated at Kaman-Kalehöyük. A number of awls were found in the settlements at Alishar Höyük and Boğazköy. Additionally, several

awls were also found in the destruction level at Kaman-Kalehöyük. Nevertheless, there was no example in Kültepe. Chisels were found only in the settlements at Boğazköy and Kültepe. It is probable that various kinds of craft were practised in both sites. Moreover, several types of bronze vessel and kitchen tool were found in the tombs and palaces at Kültepe. Pans and buckets were found only in the tombs, while cups and goblets were found only in the palaces. Bowls were found in both contexts. These results suggest that bronze vessels and kitchen tools were both used by the local elite in Kültepe and also buried in tombs as grave goods. Furthermore, three spools were found in tombs in Kültepe. These objects were decorated with a motif of two hands or two figurines. There was no example in central Anatolia. It seems that these objects came from Mesopotamia via merchants and were used in the textile industry (Özgüç 1986: 75–6). Socketed points, objects similar in shape to a spearhead, were found in the settlements at Alishar Höyük and Boğazköy. A spatula was found only in the settlement at Alishar Höyük and was presumably used on a daily basis. A number of moulds were found in the settlements and workshops at Alishar Höyük, Boğazköy and Kültepe. It is clear that Kültepe had workshops; however, moulds have not been found in central Anatolia except in the sites mentioned in the previous sentence. Another possibility is that the workshops were integral to the houses in which the craftsmen lived. To sum up, tools were not often found in tombs, because these objects had significance only as daily necessities. Exceptionally, bronze vessels and kitchen tools were found in both the palaces and the tombs, which would suggest that the local elite used these artefacts before their death, after which the objects were buried with their corpses. In any case, they could hardly be attributed to the general public, because these bronze artefacts were expensive. In summary, it would seem that there are far fewer tools from graves than from settlement contexts. Only sickles and awls were found in the destruction level at

Kaman-Kalehöyük.

4.3.3. Ornaments and personal items

Ten types of pin were found in central Anatolia, four of which were found in the destruction level at Kaman-Kalehöyük. Types 1, 2 and 3 were found in the settlements at Alishar Höyük and Boğazköy; however, at the latter Type 4 is the characteristic type. In addition, this type was also found in the tombs at Kültepe. Only two types were found in the tombs at Kültepe (Types 4 and 5). However, Type 5 was not found in other sites in central Anatolia, making it particular to Kültepe. It has been pointed out that this type was imported from Syria (see Section 4.1.11.5). Types 6–9 were found in the settlements at Alishar Höyük and Boğazköy. Only Type 7, however, was also found in the tomb at Alishar Höyük. Type 10 was excavated only in the settlement at Alishar Höyük, and it seems that this type was typical at this site. The majority of pins were found in the settlements at Alishar Höyük and Boğazköy, where they were clearly common items in the early second millennium BC. However, pins have not been excavated in the settlements at Kültepe, and in the tombs there only Type 5 pins were found. However, the absence of evidence does not mean that several types of pin were not used in Kültepe. Needles were found in the settlements at Alishar Höyük and Boğazköy. Two needles were also found in the destruction level at Kaman-Kalehöyük. The point is that several pins/needles were also found at this site –it could not be determined whether these were pins or needles because of their fragmentary nature. Needles were not found in the tombs at Kültepe, and it seems that needles were not buried as grave goods. Small rings were found in three contexts: the burial sites or tombs at Alishar Höyük and Kültepe, the settlements at Alishar Höyük and Boğazköy, and the destruction level at Kaman-Kalehöyük. A large number of small rings were found in

Kaman-Kalehöyük. It is probable that small rings were used as accessories. In fact, the positions of several small rings found with human remains suggest that they were worn as earrings. In addition, small rings were also excavated in a short chain of rings, perhaps suggesting use as a necklace. Moreover, bracelets/anklets were found in the tombs at Kültepe and in the settlements at Alishar Höyük and Boğazköy. Stamps were found in the settlement at Alishar Höyük in the destruction level at Kaman-Kalehöyük and in Kültepe. Stamps in Kaman-Kalehöyük show similar patterns to Kültepe stamps. Tweezers were found in Kültepe in a jar, perhaps suggesting that they were being used as tools rather than as personal grooming equipment. Also in Kültepe, a sceptre was found in the palace, presumably used by the local ruler. Breast covers and belt buckles were found only in the tombs at Kültepe. It seems that these objects were buried with members of the local elite. To sum up, personal items seem to have been characteristic bronze artefacts, those personal items that were found in Kültepe tombs (decorated pins, breast covers and belt buckles used by the local elite) particularly so. In spite of this, personal items were not found in the settlement at Kültepe, which probably means that these items were brought out before buildings were abandoned. At Kaman-Kalehöyük characteristic personal items such as stamps and tweezers were excavated. In summary, a large number of ornaments and personal items were found in settlement contexts. Ornaments and personal items from graves are relatively fewer. Additionally, pins and small rings were found in the destruction level at Kaman-Kalehöyük.

4.4. Conclusion

This chapter has compared the bronze objects from Kaman-Kalehöyük with those from other central Anatolian sites of the early second millennium BC, such as Alishar Höyük, Boğazköy and Kültepe. Section 4.1 presented the typology of

bronze artefacts. Section 4.2 described the bronze artefacts found at each site. Section 4.3 discussed bronze artefacts by type, such as weapons, tools and personal items. It was seen that bronze finds differ depending on the context. It is significant that the types of context excavated at each site differed: thus, burial sites or tombs were excavated at Alishar Höyük and Kültepe; settlements were excavated at Alishar Höyük, Boğazköy, Kaman-Kalehöyük and Kültepe; palaces and workshops were excavated only at Kültepe; while much of the settlement material excavated at Kaman-Kalehöyük comes from a destruction level, and so the finds characteristic of these deposits might be expected to be of a different nature from finds coming from settlement deposits created by the gradual build-up of rubbish, as is the more normal case.

The contexts of Kaman-Kalehöyük in the main target site of this research were described of the contexts in Chapter 3. The results obtained from the preliminary analysis of bronze artefacts have been shown in Chapter 4, and the contexts were related to bronze object types. For example, axes and tridents (weapons) were mostly found in the tombs and settlements at Kültepe. Certain types of axe were imported from Syria/Mesopotamia to Kültepe by merchants, because these types were not found in other sites in Anatolia (see Section 4.1.3). Moreover, knives, sickles, awls and chisels were found only in the settlement contexts, because these items were used on a daily basis. Sickles and awls were also found in the destruction level at Kaman-Kalehöyük, confirming both their association with day-to-day activity and the absence from grave contexts of these common, everyday objects. Similarly, their presence in the destruction level need not be related to conflict, as they would have been stored in the rooms concerned. Local elites and probably rulers in the palace used bronze vessels and kitchen tools, because these items were found only in the tombs at Kültepe. Bowls, cups and

goblets were also found in the palace. In addition, several personal bronze items were excavated from tombs in Kültepe, which seems to suggest that these items were used by the local elite. It can thus be seen that the bronze artefacts in burial sites or tombs and the destruction level were not particularly similar. In contrast, bronze artefacts found in settlements and in the destruction level were similar in type.

In conclusion, it is important to consider the relation between bronze objects and archaeological contexts. As can be seen from this chapter, it is clear that certain bronze artefacts are more likely to occur in certain contexts. However, a limitation of this study is that the number of bronze artefacts and clear contexts were relatively small. Future research should therefore concentrate on the investigation of the wider distribution of bronze artefacts in the early second millennium BC. Another important practical implication is that bronze artefacts from other areas, such as north Syrian/Mesopotamia, could be considered and discussed more extensively. This argument will be advanced in the next chapter.

Chapter 5: Discussion

5.0. Introduction

This chapter will, firstly, examine the importance of investigating the contextual dimension of metal artefacts (that is, their relationships with tombs/burials, with 'routine' settlement debris and with destruction deposits); secondly, compare the metal artefacts from Kaman-Kalehöyük and other central Anatolian sites, and those encountered at contemporary sites in north Syria/North Mesopotamia; thirdly, debate the question of whether Kaman-Kalehöyük had a *kārum* or a *wabartum*; and, finally, discuss the understanding of the value and importance of metalwork gained from the metal artefacts at Kaman-Kalehöyük.

5.1. A comparison of metal finds from burial, settlement and destruction contexts

Firstly, it is necessary to examine the relationship between the bronze artefacts and their respective contexts. As discussed in Chapter 4, a number of bronze artefacts were found in each context. It is important to understand the value of the metal and how the metal artefacts were utilised in each context. In fact, each metal artefact type seems to appear characteristically across different contexts. These can be divided into three main categories: tomb/burial sites, destruction deposits and settlements. The settlements may be further divided into palaces, workshops and other settlements.

It can be seen from the data in Table 4.8 that bronze artefacts in tomb/burial sites were found from Alishar Höyük and Kültepe. Both sites have mounds similar in shape and, Alishar Höyük and Kültepe are approximately 73km away from each other. Kültepe mound (50ha) is approximately twice the size of Alishar Höyük mound (28ha). Kültepe's *kārum* was called Kanesh, while Alishar Höyük's *wabarutum* was called Amukuwa. Additionally, it can be seen that there were burial facilities under the floors of the rooms in Kültepe (see Section 2.1.5). Thus, the sites were similar, even though they were of different scales.

In terms of the metalwork types, it is interesting to examine the characteristics of each type of dagger. Types 1a, 1b, 1c and 2 were found in Kültepe, whereas Type 3 was found only in Alishar Höyük, demonstrating that the types of dagger differ completely between each site. The total number of daggers found at Alishar Höyük is also far fewer. Other types of weapons, such as spearheads, axes, axe-hammers, arrowheads and tridents, were found only at Kültepe. Type 1a spearheads were found only from Kültepe tombs, while it seems that other spearhead types were not found in this context. In contrast, a variety of axe types were found in the Kültepe tombs (see Table 4.8). The axe-hammer, also found in the Kültepe tombs, was originally thought to be a unique artefact, as examples have not been found at other sites (see Section 4.1.4). Arrowheads and Type 2 tridents were also found in the Kültepe tombs.

In addition, tools such as knives, sickles, chisels, cups, goblets, socketed points, spatulas and moulds were not found in tomb/burial sites at Alishar Höyük and Kültepe. Only one awl was found at Alishar Höyük; however, this is special case. In contrast, vessels, bowls, pans and buckets were *only* excavated in the tombs at Kültepe. It is likely that these objects were valuable items, or were deposited only under specific circumstances, and it is probable, moreover, that these items were owned exclusively by the upper classes. Decorated spools were also found in the tombs at Kültepe, and were thought to be a kind of tomb gift (see Section 4.1.16). Furthermore, personal items such as needles, stamps, tweezers and sceptres were not found in tombs at either site. However, items such as small rings were found. In Kültepe these items were also decorated with precious stones or gold plated. It is probable that these objects belonged to members of the local elite (see Section 4.1.13.1). Conversely, the small rings found at Alishar Höyük were not decorated. Bracelets/anklets found from Kültepe tombs were also decorated, in this case by being covered in silver sheet (see Section 4.1.13.2). Breast covers and belt buckles were found only in Kültepe tombs. It seems, then, that these objects were also owned by the nobility. Only three types of pins were found at Alishar Höyük and Kültepe: Types 4 and 5 were found in Kültepe tombs, while Types 4 and 7 were found in burial sites at Alishar Höyük. The pins from Kültepe were also more intricately decorated than the others (see Section 4.1.11). In fact, plainer varieties of pins were almost non-existent in the tomb/burial sites. It has already been noted that the bronze types are not the same at both sites: at the Alishar Höyük burials

there are only a small number of bronze artefacts, while a number of bronze artefacts were found uniquely from Kültepe tombs, such as daggers, spearheads, tridents and axe-hammers. In addition, Kültepe bronze objects were often decorated with other materials (see Section 4.1.13). Other precious items, such as metal vessels, were also found there (see Section 4.1.16). Additionally, general tools such as knives and sickles were *not* found in tombs from Alishar Höyük and Kültepe. It is likely that bronze artefacts in tomb/burial sites indicated high status and were connected to the local elite. Indeed, there is no doubt that wealthy people were residing at Kültepe, because it was a major base for Assyrian merchants in central Anatolia.

As already discussed, various bronze artefacts were found in the settlements at Alishar Höyük, Boğazköy, Kaman-Kalehöyük and Kültepe. It is noted that the settlement at Boğazköy also had a *kārum*, known as Hattuš, in the same way that Alishar Höyük, Boğazköy and Kültepe were colony sites in the early second millennium BC (Barjamovic 2011: table 39 on 411). No probable *kārum* or *wabarutum* areas at Kaman-Kalehöyük have been excavated, and it is unlikely that *kārum* or *wabarutum* areas are in fact to be found at this site (see Section 5.3), indicating that the excavated bronze artefacts in the settlement at Kaman-Kalehöyük were found in the mound. Despite these bronze artefacts' probable provenance, they are completely different from those found in the palace at Kültepe, presumably because the scale of the site is so different. The mound at

Kaman-Kalehöyük was approximately 6ha, one-eighth of the size of the Kültepe mound.

According to Table 4.8, a dagger of Type 1c was found in the settlement from Kültepe. Daggers of Types 1a, 1b and 2 were found in the settlements at Boğazköy. All dagger types were found in the settlements at Alishar Höyük, but only Type 3 was seen in the tombs at Alishar Höyük. No examples of daggers were found at Kaman-Kalehöyük in the tombs or settlements. Spearheads were excavated in the settlements at Alishar Höyük, Boğazköy and Kaman-Kalehöyük. A spearhead of Type 2 was found from Kaman-Kalehöyük. Spearheads of Types 1b and 3 were found at Boğazköy. Spearheads of Types 1a, 1b and 2 were found in the settlements at Alishar Höyük, however, there is no spearheads from the tombs at Alishar Höyük. A large number of the axes found came from the settlements at Kültepe; these were Types 1, 2a and 2b. In the tombs in Kültepe, where a similarly large number were found, Types 1 and 2a predominated when compared with the situation in the settlements. In contrast, Types 2a and 2b were more common in the latter context. One axe of Type 2b was found in the settlement at Boğazköy. Arrowheads were found in the settlements at Alishar Höyük, Boğazköy and Kültepe. As a result, it seems that arrowheads were regularly used. Indeed, only one arrowhead was found in a tomb context at Kültepe and none at all in burial sites at Alishar Höyük. Only one trident, a Type 1 example, was found in the settlement at Kültepe. Axes and tridents were

characteristic items at Kültepe, and were not excavated so much from other sites in Anatolia (see Sections 4.1.3 and 4.1.6).

In addition, knives, which are a kind of tool, were found in the settlements at Alishar Höyük, Boğazköy and Kültepe. It seems that these artefacts were for day-to-day use. It is notable, too, that sickles were found in the settlements at all four sites. It is probable that they were also used for daily tasks, probably agricultural (see Section 4.1.7). A number of awls were found in the settlements at Alishar Höyük and Boğazköy. However, none was located in the settlement, or even the tomb, at Kültepe. It may be the case that the handicraft in which awls would have been utilised was not active in Kültepe, or it had at least ceased to be before the fire (see Section 4.1.9). Chisels were found in the settlements at Boğazköy and Kültepe. In general, they were used for craft activities. Socketed points were found in the settlements at Alishar Höyük and Boğazköy. Spatulas were also found in the settlement at Alishar Höyük. These two artefact types were not found in other contexts. It seems likely that these artefacts were used as everyday tools (see Table 4.8). A number of moulds were excavated in the settlements at Alishar Höyük, Boğazköy and Kültepe. Indeed, it is clear from excavation that Kültepe had workshops. However, it is unclear whether this was also the case at Alishar Höyük and Boğazköy. In any case, there is little doubt that workshops were adjoined to houses (Kulakoğlu 2011: 1021). A number of moulds were also found in the workshops at Kültepe. Furthermore, small rings and

bracelets/anklets were found in the settlements at Alishar Höyük and Boğazköy.

A number of needles were found in the settlements at Alishar Höyük and Boğazköy. These too were an everyday item, used in this case for sewing clothes. Stamps were found in the settlements at Alishar Höyük and Kültepe. It seems that bronze stamps were viewed as utilitarian items, as these objects were not excavated in tombs (see Section 4.1.14). A pair of tweezers was found in the settlement at Boğazköy. Pins were found only in the settlements at Alishar Höyük and Boğazköy. Pins of Types 1–4 and 6–9 were found in both sites. However, pins of Type 10 were found only at Alishar Höyük, making these the typical pin type of that site (see Section 4.1.11.10). It is interesting that the toggle pin, Type 5, was not found in the settlement at any site. In fact, Type 5 pins were found only in the tombs at Kültepe, suggesting that this type of pin was imported (Özgüç 1986: 72). In fact, similar types of pins were also found in Tell el-Dab'a (Philip 2006: 95–9 and figs 45–46 on 96–7) (see Section 4.1.11.5).

Bronze artefacts from the destruction level at Kaman-Kalehöyük are numerous, because it is probable that different contexts are involved. In addition, three types of axes were found, despite the fact that ten examples were found in the Kültepe settlements. The reason for this could be that these axes were utilised as weapons. Other bronze artefacts in settlements were also small in number, suggesting that they were removed before an attack, or perhaps, simply intended for infrequent

use. Finds of a number of moulds indicate that they had been left behind. The finding of a bronze artefact in a settlement context probably implies that it was a tool in daily use or a personal item.

In addition, several bronze artefacts, such as bowls, cups, goblets and sceptres, were found in the palace at Kültepe. It is likely that these objects were used by elite members of society or local royalty (see Section 4.3).

The destruction level at Kaman-Kalehöyük is a fruitful location for excavation research, due to the widespread fire damage, numerous human remains and the large number of bronze artefacts (see Chapter 3). It is likely that this is a peculiar excavation situation in central Anatolia (Philip 2006: 109 and 161–2). Daggers of Types 1a, 1b and 1c were found in the destruction level from Kaman-Kalehöyük. The same types of dagger were also found in the tombs, palaces and settlement at Kültepe. In addition, these types were found in the settlements and burial sites at Alishar Höyük and the settlements at Boğazköy. This suggests that daggers typical to Kaman-Kalehöyük were in fact common in central Anatolia more widely (see Table 4.8) and, along with spearheads, played a role as normal, daily-use items. Spearhead Type 1a was found only in tombs at Kültepe, while Types 1a and 1b were both found in the destruction level at Kaman-Kalehöyük. In addition, sickles were found from Kaman-Kalehöyük. Sickles were most commonly found in central Anatolia and occurred in most contexts except

tomb/burial and palace sites, demonstrating that they were a common agricultural tool (see Section 4.1.8). Awls were also found in the destruction level at Kaman-Kalehöyük, suggesting, similarly, that they were common tools (see Section 4.1.9). The same is true of pins (see Section 4.1.11); example of Types 1–4 were found in the destruction level at Kaman-Kalehöyük. Many small rings of the characteristic bronze types were also found in the destruction level at Kaman-Kalehöyük. In contrast, even the total amount of small rings from Alishar Höyük and Boğazköy combined was small in number. As both pins and rings were found in the destruction it is clear that they were worn in daily life, and were not made merely for the adornment of bodies when they were placed in graves (see Section 4.3.3). Moreover, stamps were also found in the destruction level at Kaman-Kalehöyük, meaning that someone in the destruction level used these stamps (see Section 3.4). Similarly, a pair of tweezers was found in a jar in the same destruction level (see Section 3.4).

Finally, it is clear that the destruction level of Kaman-Kalehöyük has provided us with a unique opportunity to understand the range of metal objects that might have been readily accessible to the population in their everyday lives. This range includes small weapons, everyday tools, and a large number of personal ornaments, the age and gender relations of which can be observed in the destruction deposit.

5.2. A comparison of the MBA metalwork repertory of central Anatolia with that of neighbouring regions

The second point raised at the beginning of this chapter is that several bronze types were found in north Syria/Mesopotamia and the Levant. It is important to compare these areas with central Anatolia, because bronze finds were widespread across the region in the early second millennium BC (see Chapter 4). Unfortunately, contexts are unclear in many cases, although tomb/burial sites are usually easily identifiable. The best comparisons may be made between weapons (daggers, spearheads, axes, axe-hammer, arrowheads and tridents), tools (knives, sickles, awls and chisels) and personal items (pins and needles), as these objects were also actively studied in the neighbouring regions. For this research, the following works provided the main sources of comparative information: Blackwell (2011), Gernez (2007), Klein (1992) and Philip (1989 and 2006).

According to Table 5.1, daggers of Type 1a were excavated in the tombs at Aphek in the southern Levant (Gernez 2007: III pls 590.1 and 2) and Sidon in the northern Levant (Gernez 2007: III pl. 590.12). Daggers of Type 1b were found in the tombs at Ruweisé in the northern Levant (Gernez 2007: III pl. 599.3), and at Vounous (Gernez 2007: III pls 602.1, 4, 8 and 10), Lapithos (Gernez 2007: III pl. 602.5) and Karmi (Gernez 2007: III pl. 602.11) in Cyprus. Daggers of Type 1c were found in the tombs at Yftah'el in the southern Levant (Gernez 2007: III pl. 605.8) and at Lapithos (Gernez 2007: III pl. 605.9) and Vounous (Gernez 2007:

III pl. 605. 12) in Cyprus. Daggers of Type 2 were found in the tombs at Tell Bi'a (Gernez 2007: III pl. 556.4) and at Baghouz (Gernez 2007: III pl. 560.4) in north Mesopotamia and Nippur (Gernez 2007: III pl. 554.5) and Suleimeh (Gernez 2007: III pl. 560.3) in south Mesopotamia. Additionally, two Type 2 daggers were found in burial sites at Tell el Dab'a in Egypt (Philip 2006: 47 and figs 15.1–2 on 48). Daggers of Type 3 have not yet been reported in the neighbouring regions.

Spearheads of Type 1a were excavated in tombs at Baghouz in Mesopotamia (Gernez 2007: III pls 425.1–2 and 434.7), and Qatna (Gernez 2007: III pl. 431.2) in the northern Levant. This type was also found in temples at Mari in north Mesopotamia (Gernez 2007: III pl. 431.3), in tombs at Hama (Gernez 2007: III pl. 417.1) and Tell 'Arqa (Gernez 2007: III pls 417.3–4) in the northern Levant, and in Zefat tomb in the southern Levant (Gernez 2007: III pls 433.2–3 and 434.2–5). This type was also found in tombs at Ashimah (Gernez 2007: III pls 417.3–4 and 433.5) and Ghalilah (Gernez 2007: III pl. 434.6) in the Arabian Peninsula, and in a burial site at Tell el Dab'a (Philip 2006: 59–60 and fig. 23 on 60). Spearheads of Type 1b were found in an unknown context at Hıdırlı (Gernez 2007: III pls 289.3, 5 and 6, and 290.1), Sinop (Gernez 2007: III pl. 289.4) and Zile (Gernez 2007: III pl. 289.2) in northern Anatolia, and Hasancik in south-east Anatolia (Gernez 2007: III pls 289.1 and 290.5). It seems likely, therefore, that this type was found only in Anatolia (see Table 5.1). Spearhead Type 2 was found only in a deposit at Byblos. However, its context is unclear (Gernez 2007: III pl. 418.1). Spearhead

Type 3 was not excavated at other sites where the focus was on the early 2nd millennium because it was typically earlier, and that the few artefacts found in tombs at Acem Höyük, central Anatolia, dated to 2600–2200 BC (Gernez 2007: III pls 397.1 and 4).

Axes of Type 1 were found in tombs at Gesher (Gernez 2007: III pls 142 and 467), Aphek (Gernez 2007: III pls 2–3), Tel Rehov (Gernez 2007: III pl. 144.1), Tel Kabri (Gernez 2007: III pl. 144.3), Zefat (Gernez 2007: III pl. 145.1), Meron (Gernez 2007: III pl. 145.2), Tell Kurdaneh (Gernez 2007: III pl. 145.4), Beth Shan (Gernez 2007: III pl. 147.4) and Megiddo (Gernez 2007: III pl. 134. 5) in the southern Levant. One was found in a room at Tel Dan in the southern Levant (Gernez 2007: III pl. 143.4). The same type was also found at tombs in the northern Levant: Hama (Gernez 2007: III pls 144.2 and 147.5), Ras Shamra (Gernez 2007: III pl. 144.7), Sidon (Gernez 2007: III pls 146. 1, 3 and 6), Tell et-Tin (Gernez 2007: III pls 146.7 and 147.3), Byblos (Gernez 2007: III pls 148.5–6), Tell ‘Arqa (Gernez 2007: III pl. 149.1), Amrith (Gernez 2007: III pls 149.3–4) and Ruweisé (Gernez 2007: III pl. 150.10). Further examples were found in the settlement at Ras Shamra (Gernez 2007: III pl. 143.7), and in the Byblos deposit (Gernez 2007: III pl. 135.2 and 6). Additionally, it was excavated in tombs at Mari (Gernez 2007: III pl. 149.2) and Baghouz (Gernez 2007: III pls 149.8, and 150.5–6, 9, 11 and 13) in north Mesopotamia, and Tell el Dab’a (Gernez 2007: III pl. 142.5) and Kom el-Hisn (Gernez 2007: III pl. 137.5) in

Egypt. Axes of Type 2a was found in tombs at Suleimeh (Gernez 2007: III pls 105.2 and 106.2) and Halawa (Gernez 2007: III pls 105.3–4) in northern Syria, and Ashur in north Mesopotamia (Gernez 2007: III pl. 106.3). Axe Type 2b was clearly a local axe type in Anatolia (see Table 5.1). Axes of Type 3 were excavated in the tomb at Kom el-Hisn in Egypt (Gernez 2007: III pls 130.5–6) and in the Levant (Philip 1989: 280–1). In addition, a similar type of axe-hammer was found in a place at Megiddo in the southern Levant (Gernez 2007: III pl. 209.2). However, its blade is a little bigger than that at Kültepe.

Table 5.1. Comparison with bronze artefacts in neighbouring regions based on central Anatolian objects.

North Anatolia	West Anatolia	South／East Anatolia	Central Anatolia	Type	North Mesopotamia	South Mesopotamia	Northern Levant	Southern Levant	Cyprus	Egypt	Arabian Peninsula
			■	Dagger Type 1a			■	■			
			■	Type 1b			■		■		
			■	Type 1c				■	■		
			■	Type 2	■	■				■	
			■	Type 3							
			■	Spearhead Type 1a	■		■	■		■	■
■		■	■	Type 1b							
			■	Type 2			■				
			■	Type 3							
			■	Axe Type 1	■		■	■		■	
		■	■	Type 2a	■	■					
	■	■	■	Type 2b							
			■	Type 3			■	■		■	
			■	Axe-Hammer							
			■	Arrowheads		■					
			■	Trident Type 1							
			■	Type 2			■				
	■		■	Knives			■	■	■	■	
			■	Sickles					■		
	■	■	■	Awls			■		■	■	
	■	■	■	Chisels			■			■	
		■	■	Pin Type 1			■				
			■	Type 2							
			■	Type 3			■				
			■	Type 4	■	■				■	
		■	■	Type 5	■		■			■	
			■	Type 6	■						
			■	Type 7							
			■	Type 8	■		■				
		■	■	Type 9	■					■	
		■	■	Type 10			■				
			■	Needles	■		■			■	

Arrowheads were found at Susa in South Mesopotamia (Gernez 2007: III pl. 477.1); however, the context is unknown. This was often found in the settlements at Kültepe (see Table 4.8).

Tridents were unusual bronze finds in sites outside central Anatolia. Tridents of Type 2 were found in tombs at Byblos (Gernez 2007: III pls 459.1–3). Knives were found in tombs at Yftah'el (Gernez 2007: III pl. 482.3) and Ginosar (Gernez 2007: III pls 482. 9–10) in the southern Levant, Byblos (Gernez 2007: III pl. 482.6) and Tell el Dab'a (Gernez 2007: III pls 482. 2 and 8). In addition, they were found in settlements and burials at Alambra and burials at Kalavasos in Cyprus (Blackwell 2011: 602 and 612). Sickles were found in the settlement at Alambra in Cyprus (Blackwell 2011: 602). All examples of sickles were found in the settlement. It is likely that these sickles were specifically utilised as an agricultural tool (see Section 4.1.8). Awls were found in the settlements at Alambra (Blackwell 2011: 602), Byblos (Blackwell 2011: 655) and Tell el Dab'a (Philip 2006: 127 and fig. 58.2–3 on 130). Chisels were found in the settlement at Byblos (Blackwell 2011: 656) and Tell el Dab'a (Philip 2006: 123 and fig. 56.1 on 124). For more details about pins and needles, see Sections 4.1.11 and 4.1.12.

A number of daggers of Types 1b and 1c were found from Cyprus, whereas daggers of Type 3 were found only in central Anatolia. It therefore seems that this dagger type is local to these areas. Most spearheads of Type 1b were found in

central Anatolia, but some occurred in north and south-east Anatolia. It could be that this type is local to Anatolia, as these objects have been excavated nowhere else. Spearhead Type 3 was contemporary to the Early Bronze Age (see Section 4.1.2.4). Axes of Type 2b were often found in central Anatolia (see Section 4.1.3.3). Axes of Type 3 were similar to types found in Egypt (Gernez 2007: III pls 130.5–6). Axe-hammers were not often found in central Anatolia, occurring only in Kültepe. In contrast, tridents of Type 1 were excavated only from central Anatolia. Tridents of Type 2 were found in Byblos; however, the total number was small and it could be that it was an ornamental item rather than a weapon (see Section 4.1.6.2). Knives were widespread, suggesting that these objects were a common tool in the early second millennium BC (see Table 5.1). Sickles were found only in central Anatolia and Cyprus, and the total number of sickles in the former region was high, suggesting that this was a common tool in central Anatolia. Table 5.2 shows local and more widely spread types of bronze artefacts. They were found across large regions.

Table 5.2. Local and widely spread bronze types.

Type	Local Bronze Types	Widely Spread Bronze Types
Dagger Type 1a		
Type 1b		
Type 1c		
Type 2		
Type 3		
Spearhead Type 1a		
Type 1b		
Type 2		
Type 3		
Axe Type 1		
Type 2a		
Type 2b		
Type 3		
Axe-Hammer		
Arrowheads		
Trident Type 1		
Type 2		
Knives		
Sickles		
Awls		
Chisels		
Pin Type 1		
Type 2		
Type 3		
Type 4		
Type 5		
Type 6		
Type 7		
Type 8		
Type 9		
Type 10		
Needles		

In summary, it should be noted that it is not easy to distinguish between local types and widely spread types because of the differing numbers of excavated finds at each site. As can be seen in Table 5.2, a characteristic of local bronze pin types of central Anatolia is that these objects are usually a more simple shape than foreign pin types (Types 2 and 7). Additionally, several particular types were not found in other regions: for instance, Spearhead Type 1b and Axe Type 2b were mostly found in central Anatolia. Spearhead Type 2, similarly, was found in only one place outside Anatolia, in the Byblos deposit. Tridents are notably low in number. In spite of this, a few examples were found in Kültepe. It could be argued that these artefacts were made especially for a local ruler or obtained as gifts from other high-ranking members of society (Gernez 2007: III pls 459.1–3) (see Section 4.1.6.2). On the other hand, widely spread bronze objects include common tools such as sickles, knives, awls and chisels and common weapons such as daggers of Types 1a, 1b, 1c and 2, spearheads of Type 1a and axes of Types 1 and 2. Axes of Type 3 and tridents of Type 2 were fewer in number; however, both types were found in remote locations. It could be that they were items of exchange. Bronze finds in other regions during the Middle Bronze Age are similar. However, the level of decoration differed between objects; for example, shaft hole axes were sometimes decorated by means of a cylinder which covered the handle (Gernez 2007: III pl. 66.4).

Judging by a comparison of metalwork finds, it is possible that metalwork

techniques and styles in central Anatolia were shared with neighbouring regions, as a number of widely spread types of bronze find were excavated in both Anatolia and the neighbouring regions. In other words, it can be stated that there was a shared knowledge of basic metalwork techniques between these regions; however the origin of those technologies has not been identified. In fact, technical development has not been found even in metal workshops such as at Hirbemerdon Tepe (Massimino 2013: 122). Moreover, Massimino points out that the materials found at the site had already been refined from their raw origins before reaching the site. It is likely that the metals had been partially processed at the point of origin as this would reduce transportation requirements (see Sections 2.5 and 2.6). Thereafter, they were processed into bronze in locations such as Hirbemerdon Tepe and Kültepe. Hence, the location of raw material production and metalworking were closely related, meaning that the organisation of the metal industry had played an important role in central Anatolia and the neighbouring regions (see Section 2.4). It is not obvious that the metalworking technologies were practised at workshops such as Hirbemerdon Tepe. However, there is no doubt to concern with the Assyrian trading networks and that trade contributed to the development of metalworking.

5.3. Metalwork evidence and the possibility of a colony site at Kaman-Kalehöyük

The mound at Kaman-Kalehöyük is approximately 280m in diameter and 16m

high; in total it covers approximately 6.15ha (Omura 1999: 4). An ancient road ran from the south of mound to the north (Omura 2004: 87). However, it is not certain that the road was created as a part of the Assyrian networks or not, although there is no doubt that it was a part of the ancient local road network. For the purposes of comparison (see Section 2.1), the mound at Kültepe is approximately 500m in diameter and 20m high, and covers a total area of approximately 50ha; along with the *kārum* area, the site is crescent shaped to east (Sagona and Zimansky 2009: 227; Kulakoğlu 2011: 1019–20). Boğazköy also had a mound, although it differs from the other ruins, because the site was a capital city of the Hittite in later periods. The mound is huge, and a number of official settlements were found at the site. There was also a *kārum* area to the north of the mound. As a result, it is difficult to assess the mound size of the early second millennium BC, because the settlements of that period have not been excavated. The mound at Alishar Höyük covers approximately 28ha and the *wabartum* area was a crescent shape that covered an area of 500m from the east to the south of the mound (Sagona and Zimansky 2009: 176; Schmidt 1932: 80–81). It will be seen, therefore, that the size of the site at Kaman-Kalehöyük is much smaller than others.

Two tablets were found at Kaman-Kalehöyük (see Section 3.1.1). One was written in the old Assyrian script and is contemporary with the *Kārum* Kanesh level Ib. However, its fragmentary nature makes it indecipherable (Omura 1994:

119 and 124 note 9). The other was also written in the old Assyrian script; it deals with cereal and includes a personal name of Hittite origin (Yoshida 2002: 133–7). Even though the tablets found at Kaman-Kalehöyük were written in the old Assyrian script it cannot be assumed from that there was a *kārum* or *wabartum*, because the ancient names from tablets and archaeological evidence has not been consistent. Other evidence suggests that there was no language-based problem of communication between the Assyrians and Anatolians (Michel 2011: 327). However, it is not certain that Anatolians used the cuneiform for writing in the Old Assyrian period, in spite of the fact that Assyrians introduced writing to Anatolia (Michel 2011: 327). Therefore, it is not clear who wrote and kept the tablets.

In summary, it is possible, given the current evidence, that Kaman-Kalehöyük had no colony site in the early second millennium BC. Additionally, the metalwork evidence was not sufficient to confirm a colony site at Kaman-Kalehöyük. However, it is possible that the local Anatolian merchants had participated actively in trade at Kaman-Kalehöyük. Furthermore, Assyrian and Anatolian merchants resided in *Kārum* Kanesh (see Section 2.7). This implies that the main role of Assyrian merchants was to trade between Ashur and Kültepe. On the other hand, the primary role of Anatolian merchants was internal, Anatolian trade. It thus seems more likely that Kaman-Kalehöyük belonged to the network of internal Anatolian trade routes. It is probably for this reason that the site is located

on one of the ancient roads heading from Kültepe to the northern sites. It is recommended that further research be undertaken in the area around the mound, however, because it is nevertheless possible that colony areas existed in Kaman-Kalehöyük. Another site close to Kaman-Kalehöyük where it is possible that a *kārum* or a *wabartum* area existed is Yassı Höyük, which is located between Kültepe and Kaman-Kalehöyük. The mound covers approximately 31ha and includes palace buildings. However, work here is just beginning, and further investigation is expected (*Japanese Institute of Anatolian Archaeology: Yassı Höyük* 2012).

5.4. Metalwork evidence from Kaman-Kalehöyük and the value and importance of metal artefacts in MBA central Anatolia

To address the fourth point raised in the introduction to this chapter it is necessary to consider the following three issues: firstly, the demonstration by the archive evidence off both the raw materials necessary to make bronze and the influence of metal manufacturers; secondly, bronze prices; thirdly, point is to discuss both the issue of bronze artefact values and the results of the analysis described below.

Using the evidence of the Kültepe archives, this research has established the approximate value of the metals copper and tin, and of metal artefacts made using different alloy combinations. However, most bronze artefacts were not described in the archives. It could be that manufactured goods were produced locally at each

site. Indeed, according to the Kültepe archives, there were three workshops in *Kārum* Kanesh level II and six workshops in *Kārum* Kanesh level Ib (Özgüç 1986: 41–4 and 48–50). The copper smiths thus lived and worked in Kültepe. However, the smiths were not only local people: there were also Assyrian smiths, because the archives show both Anatolian and Assyrian names (see Section 2.7). In addition, moulds were sometimes found in private houses in the *Kārum* Kanesh, because the customers brought along specifically designed moulds to have their artefacts made (Dercksen 1996: 71–2). It is possible that these moulds had been kept in the houses in Kültepe. Massimino (2013: 125) points out that the technology of metallurgy came from other places in the same region, and thus it is probable that metalworking techniques were shared. In addition, tin could be obtained via Assyrian trade, and copper was probably sourced at the Ergani Maden mine, approximately 150km north-west of Hirbemerdon Tepe, although the copper source was not established in the mine in the Middle Bronze Age because the local Anatolia merchants, such as Amorites, had established the metal exchange system before Assyrian merchants entered the trade network (Massimino 2013: 122). Assyrian merchants began to trade in ways that took advantage of the existing trade routes used by local Anatolia merchants (Dercksen 1996: 163–4). Despite this, Assyrian merchants developed the existing metal technology in many ways; however, the metalworking of the Assyrians was not particularly notable (Massimino 2013: 126). Hence, although the Assyrian merchants had the more developed metallurgical technology than the Anatolians,

they purposely came to Anatolia and brought along with them moulds. It seems that there was the lack of mining resources in north Syria/Mesopotamia in the early second millennium BC. Thus, Assyrian merchants wanting to make metalwork went to Anatolia in order to have easy access to tin. That was why both copper smiths, Anatolian and Assyrian, lived together in Kültepe workshops; and it is possible that both lived and worked together at other sites which had metal workshops in Anatolia.

In addition, the price of bronze artefacts was usually fluid. In fact, bronze prices are not clearly shown in the archives, although the price of bronze artefacts was higher than copper artefacts. For example, the price of 1kg of refined copper was 2 shekels of silver and 1kg of tin was 28 shekels of silver (see Table 2.3), and consistently in the early second millennium BC the price of tin was much higher than that of copper. Section 2.10 showed that the price of 1kg of refined copper was on a par with approximately four daggers made of 10% tin bronze, as against nine daggers made of 100% copper. Similarly, the price of 1kg of tin compared to approximately 56 daggers of 10% tin bronze, as against approximately 127 daggers of 100% copper. Hence, the price of a 10% tin bronze dagger was 22.7% higher than that of a 100% copper dagger (see Table 2.3).

Yet most archaeological discussions of metal objects treat artefacts of the same type as 'the same' object. However, the addition of tin to copper would have

changed very significantly the ‘cost’ and so presumably the ‘value’ of a metal object, and could possibly send very different status messages to the world in which we are. A 10% tin bronze artefact has a different colour from one made of pure copper (Masubuchi and Nakai 2003: 123), and, thus, people in the past would have been aware of the difference between them. Unfortunately, for today’s researchers, owing to the products of corrosion, this difference is no longer clear to the naked eye; and laboratory analysis is necessary to distinguish between the metals, i.e., bronze and copper. Several metal pins found in the phase IIIc context of Kaman-Kalehöyük were analysed using X-ray fluorescence analysis (Masubuchi and Nakai 2003: 123–35). This led to an unexpected result: nine out of 25 samples (36%) were made of bronze, and the remainder were made of copper, not including tin (Masubuchi and Nakai 2003: Table 2 on 125). This percentage is much lower than was expected. However, we must bear it in mind that this does not necessarily reflect the proportion of bronzes to coppers for the metal objects used at Kaman-Kalehöyük at that time, because the metal objects analysed are few, confined to pins. When various metal types are analysed, more accurate picture concerning quantitative analysis for the presence of genuine bronzes will emerge. Further in addition, several pieces of bronze found in R150 were also analyesd by using the method of lead isotope analysis. Thus lead impurities in the bronze pieces were examined, with the result that the lead isotopic ratios of three bronze pieces totally differed from those of the other pieces, which indicated that the three bronze samples were of the metal which

came from a geologically different region (Hirao and Enomoto 1997: 198 with Fig.11). From this, a possibility that the three pieces were of bronzes imported from a place outside Anatolia is now under consideration.

Turning our eyes to another site, we know that there is a research on metal identification by a method of chemical analysis, called X-ray fluorescence spectrometry, for objects from *Kārum* Kanesh levels II and Ib (Masubuchi, Sanada and Naki 2004: 153). The objects analysed were fifty in number, and were varied, such as pins, rings, bracelets, vessels arrowhead and axes. This analysis proves that some vessels and a few weapons are of copper including arsenic (Masubuchi, Sanada and Naki 2004: 153-61).

As for Middle Bronze Age metal objects, there are several brief reports mentioning what kind of metal was in use, copper or arsenical copper or genuine bronze. At Hama lying in western Syria, fenestrated axes assigned to MBA I occur, which are said to be leaded bronzes (Oren 1971: 128). At Megiddo (modern Tell el-Mutesellim) lying in the southern Levant, daggers and axes of genuine bronze occur together with arsenical coppers in a MBA context (Philip 1989: 184). In addition to these, in MBA II tombs of Tell el-Dab'a, a site in Egypt, not only coppers but also arsenical coppers occur (Philip 1989: 184). These enumerated here show that during the Middle Bronze Age, arsenical copper, as well as copper with no inclusions intentionally added, was still in use alongside of

bronze. We now should, therefore, recognise that the Middle Bronze Age cannot be marked as a period in which bronze was exclusively used.

The above discussion suggests that the difference in value made by alloying tin and copper was significant, as described in the Kültepe archives. The metalwork evidence from Kaman-Kalehöyük was also useful for understanding metal values. Unfortunately, several chemical analyses of artefacts from the site, the analytical data from the destruction level in the phase IIIc was insufficient to draw firm conclusions.

5.5. Summary and conclusion

In summary, the examination of the evidence has clarified the following points that have hitherto been under-emphasised in the general literature on central Anatolia in the early second millennium BC.

The first point of discussion is the relationship between metalwork finds and archaeological contexts. It appears that burial/tomb finds were more highly decorated than settlement finds and that specific types of bronze items were concentrated in tombs. For example, spearheads of Type 1, all axe types, tridents of Type 2 and pins of Types 4 and 5 were often found in Kültepe tombs (see Table 5.1). In addition, bronze vessels and kitchen tools such as pans and buckets were found in tombs in particular. It is likely that these artefacts were deposited as

grave goods (see Section 4.1.16). The settlement finds were often common tools such as knives, sickles, awls and chisels. It must be presumed that these objects were used for daily tasks (see Section 4.3). Personal items such as pins and needles were also found in the settlements. It seems that these bronze items were worn daily (see Section 4.3). The destruction level finds were similar to those from the settlements. Bronze items, which had been especially prepared for the conflict as weapons, were not found in Kaman-Kalehöyük (see Chapter 3). Hence, it is possible that the people of Kaman-Kalehöyük had been suddenly attacked.

The second point is that two types of metal object were found in Kaman-Kalehöyük: local types and more widely distributed types (see Table 5.2). The local bronze items were, necessarily, absent from other regions, and include, for example, spearheads of Types 1b and 2, axes of Type 2b and tridents of Type 1. In addition, local pin types, such as Types 2 and 7, were simple in shape. In contrast, the widely spread bronze items were mostly common tools in the same both within Anatolia and in other neighbouring regions. Dagger types showed continuity in both regions, suggesting that daggers were a common weapon in the early second millennium BC. Similarly, the organisation of metal industry in the early second millennium BC in Anatolia was a division of labour between the workshops and the producing areas, as exemplified at Hirbemerdon Tepe, , and it may be suggested that similar activities occurred in the neighbouring regions (see Section 5.2).

The third point is the possibility of there having been a colony – a *kārum* or *wabartum* – in Kaman-Kalehöyük. However, the answer may well be no, at least on current evidence (see Section 5.3).

The fourth point is the importance of understanding the value of metal artefacts from the evidence of bronze objects (see Section 5.4). The prices of a number of different commodities, including tin and copper, were retrieved from the Kültepe archives. It was shown that prices changed according to the place and period. Therefore, it is probable that the value of metal also fluctuated, although the price difference between copper and bronze artefacts was quite substantial.

Chapter 6: Conclusion

This dissertation has investigated bronze artefacts from the early second millennium BC in central Anatolia. The aims of this research, and its success in achieving those aims, are detailed in the following three paragraphs. Additionally, results, limitations and a final summation will be discussed below.

This study set out, initially, to determine the typology of bronze artefacts in Kaman-Kalehöyük, and to compare it with those of Alishar Höyük, Boğazköy and Kültepe in central Anatolia. Additionally, the aim was to compare with other regions, such as north and south Mesopotamia and the northern and southern Levant. This research has shown that a wide range of bronze types was excavated in the neighbouring regions. The most interesting types in terms of a wider regional comparison are the shaft hole axe type (axe Type 2a), the toggle pinhead type (pin Type 5) and the coiled pinhead type (pin Type 9), which were found in tombs from south-eastern Anatolia and north Mesopotamia (see Table 5.1). In central Anatolia, these types were found only in tombs at Kültepe. The regions described were integrated with Assyrian trade networks, raising the possibility that these items were imported from north Syria/Mesopotamia to Kültepe. An origin in Anatolia might suggest, instead, that Anatolians wanted to use the same styles of pin as people further east. The clinching evidence might be the identity of those buried in the graves at Kultepe – Anatolians or Assyrian merchants – but unfortunately no clear answer to this question has come to light. In any case,

central Anatolia was strongly linked with the area to the east in the early second millennium BC through a functioning Assyrian trade network. Hence, the findings of this study suggest that the trade network and metal finds were closely related to each other, because bronze finds were similar between central Anatolia and the neighbouring regions. It is probably that metalwork styles were shared with other regions. Unfortunately, the study is limited by the lack of a full set of skeleton data and limited information regarding the bronze artefacts. Nevertheless, these findings enhance our understanding of the Assyrian trade network in the early second millennium BC.

The second purpose of the current study was to investigate the relationship between bronze finds and their archaeological contexts, such as tomb/burials, palaces, workshops, settlements and the destruction level at Kaman-Kalehöyük, which is the archaeological context specifically examined here. Here, the major finding related to the situation and presumed use of bronze artefacts. For example, many tomb/burial and palace finds were used as markers of wealth and high status; these objects were not found in settlement contexts, for example, meaning that they were buried specifically as grave goods (see Section 5.1). However, daggers and axes did not feature significantly in graves, suggesting that weapons that were not used regularly were buried in other contexts. At Kültepe axes were mostly found in graves and the settlement. Despite these facts, several axe moulds were found at Kültepe and Hirbemerdon Tepe, suggesting that this was where

these axes were consumed (see Section 4.1.17). In addition, at most sites the settlement finds were mostly daily necessities, such as common tools and personal items. Since, in contrast, very few day-to-day items were excavated in Kültepe, it suggests that they were removed before the building was abandoned (see Section 4.2.3). Furthermore, the destruction level finds in Kaman-Kalehöyük did not vary much from typical settlement finds, suggesting that the settlement was suddenly attacked at some point while it was inhabited (see Section 3.4). However, an important limitation lies in the non-availability of full context information. Nevertheless, the current findings add substantially to our understanding of life in the early second millennium BC.

The final aim was to assess the 'value' and importance of metal artefacts in the early second millennium BC, an area of study little discussed up until the present. Alongside this, it was intended that a little more attention could be drawn to bronze technology and composition. The main finding to emerge from this study in this regard is related to the price of bronze and its value (see Section 2.10.3). The data for this part of the study was drawn from the Kültepe archives, because it is difficult to argue such matters in terms of metal finds. Nevertheless, it is clear that the value of bronze differed between regions and over time. For example, the price of commodities, including that of copper and tin, decreased from the late Bronze Age to the Hittite Empire period (Monroe 2007: 175). In addition, tin was one of the most expensive traded goods in the early second millennium BC, and

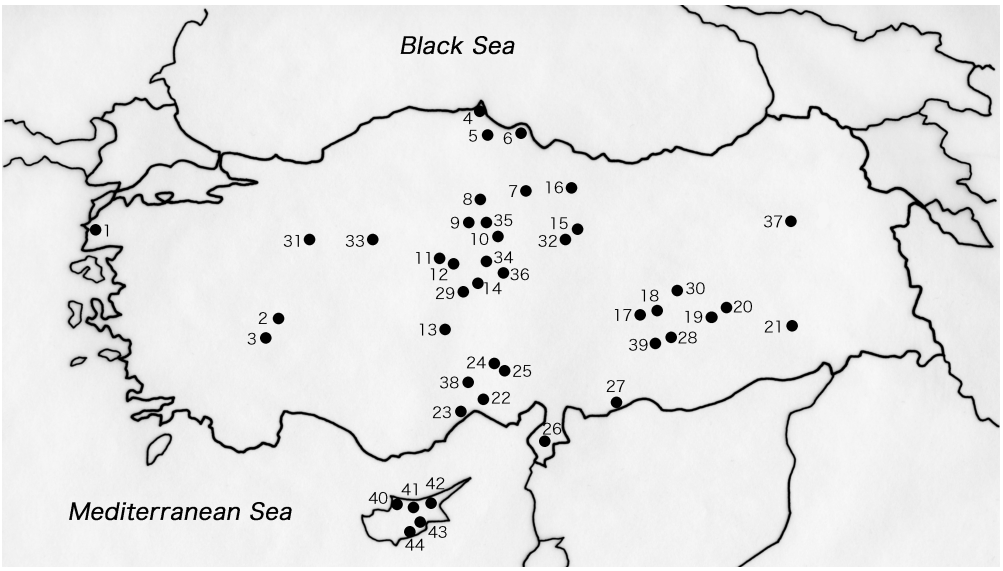
was imported from Ashur regardless of whether mines in central Anatolia were operating or not (see Section 2.6.1). In addition, bronze was not the same price in Anatolia and in Ashur, because the level of demand varied. Moreover, it is probable that the price of raw materials varied even inside Anatolia, because where there were workshops, such as in Kültepe and Hirbemerdon Tepe, the supply rate would be high. In addition, the price of bronze products would also increase if the price of raw material was high. Therefore, there is no doubt that the value of bronze changed in ancient societies. Furthermore, understanding the value of bronze in terms of its raw materials is not easily achieved by means of archaeological study, because the colour of archaeologically recovered artefacts is the same regardless of the alloy content of the bronze. However, it is partly possible to reach this understanding by using scientific analysis and the deciphered cuneiform tablets. Unfortunately, it was not possible to measure tin content for all bronze artefacts. For instance, the level of appropriate chemical analysis of bronze artefacts so far undertaken is small. Thus, the value of the bronze artefacts cannot truly be determined. However, the current findings add substantially to our understanding of the value of metal in the early second millennium BC.

To sum up, it is recommended that further research be undertaken in the following areas: firstly, further excavation needs to be done in order to establish whether Kaman-Kalehöyük has a *kārum* or a*wabarutum* area. It would also be interesting

to assess the overall effects of colony sites in central Anatolia. Secondly, more information on bronze typology would help us to establish a greater degree of accuracy on this matter. It is important that a number of samples be collected from the neighbouring regions. Finally, future research should concentrate on chemical analysis of metal artefacts in order to evaluate the value of bronze.

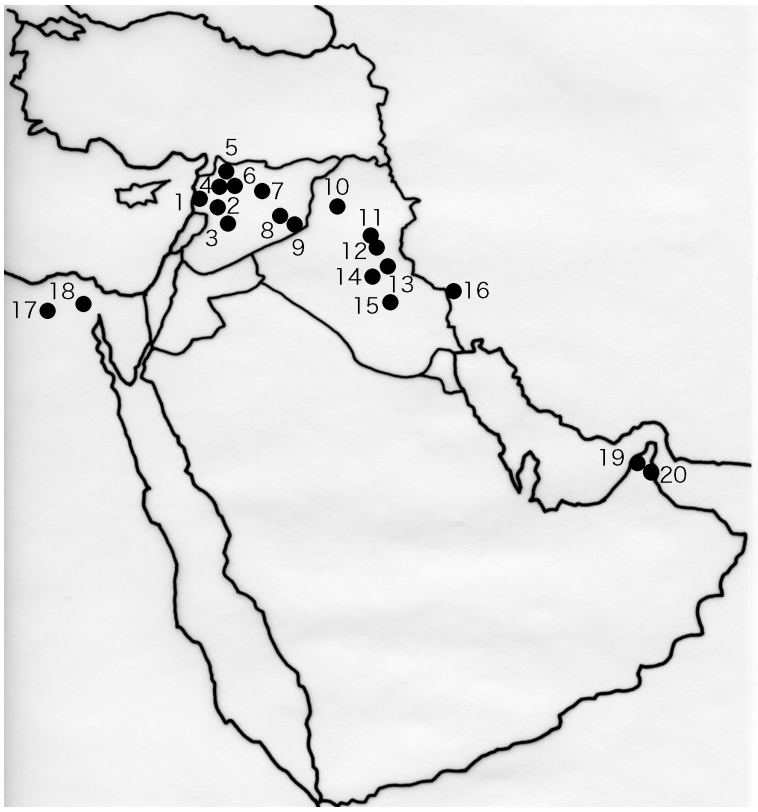
Appendix

Maps



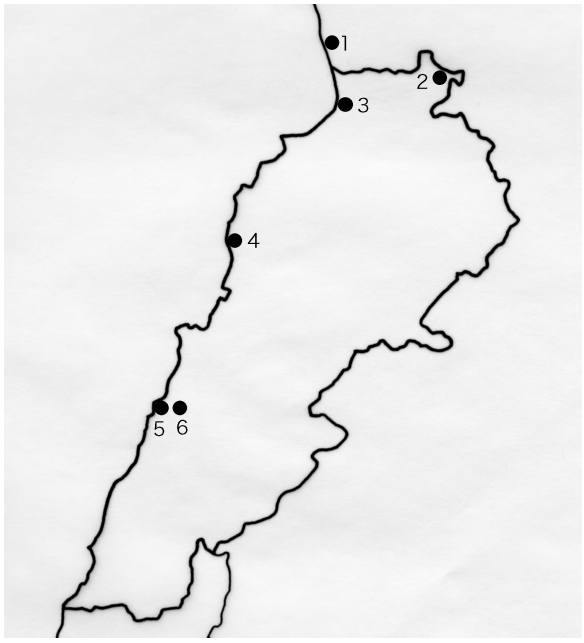
Map 1. Map shows the location of the relevant archaeological sites in Anatolia. (Source: *Sekai Chizu: Western Asia* 2014, modified to show the location of sites.)

1. Troy
2. Kusura
3. Beycesultan
4. Sinop
5. Hıdırlı
6. İkiztepe
7. Zile
8. Alaca Höyük
9. Boğazköy
10. Alishar Höyük
11. Kaman-Kalehöyük
12. Yassı Höyük
13. Acem Höyük
14. Kültepe
15. Sivas
16. Horoztepe
17. Malatya
18. Arslantepe
19. Çayönü
20. Ergani
21. Hirbemerdon Tepe
22. Tarsus
23. Mersin/Yümük Tepe
24. Kestel
25. Göltepe
26. Tell Achana/Alalakh
27. Charchemish
28. Lidar
29. Hacılar
30. Elazığ
31. Küllüoba
32. Kayalıpınar
33. Polatlı
34. Boğazlıyan
35. Sorgun
36. Karaözü
37. Kapalıkaya
38. Bolkardağ
39. Hasancik
40. Lapithos
41. Karmi
42. Vounous
43. Alambra
44. Kalavasos



Map 2. Map showing the location of the relevant archaeological sites in the neighbouring regions. (Source: *Sekai Chizu: Western Asia* 2014, modified to show the location of sites.)

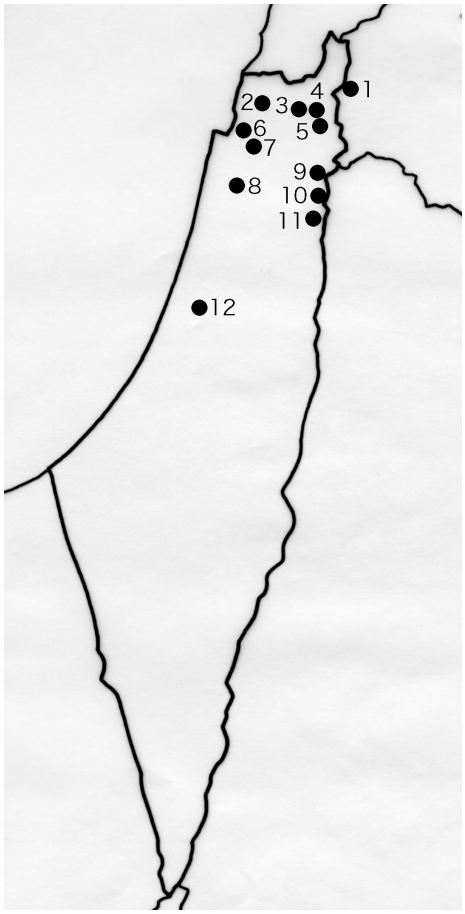
1. Ras Shamra
2. Hama
3. Qatna
4. Ebla
5. Aleppo
6. Emar
7. Tell Bi'a
8. Mari
9. Baghouz
10. Ashur
11. Halawa
12. Suleimeh
13. Ešnunna
14. Sippar
15. Nippur
16. Susa
17. Kom el-Hisn
18. Tell el-Dab'a
19. Ghalilah
20. Ashimah



1. Amrith
2. Tell et-Tin
3. Tell ‘Arqa
4. Byblos
5. Sidon
6. Ruweisé

Map 3. Map showing the location of the relevant archaeological sites in the northern Levant.

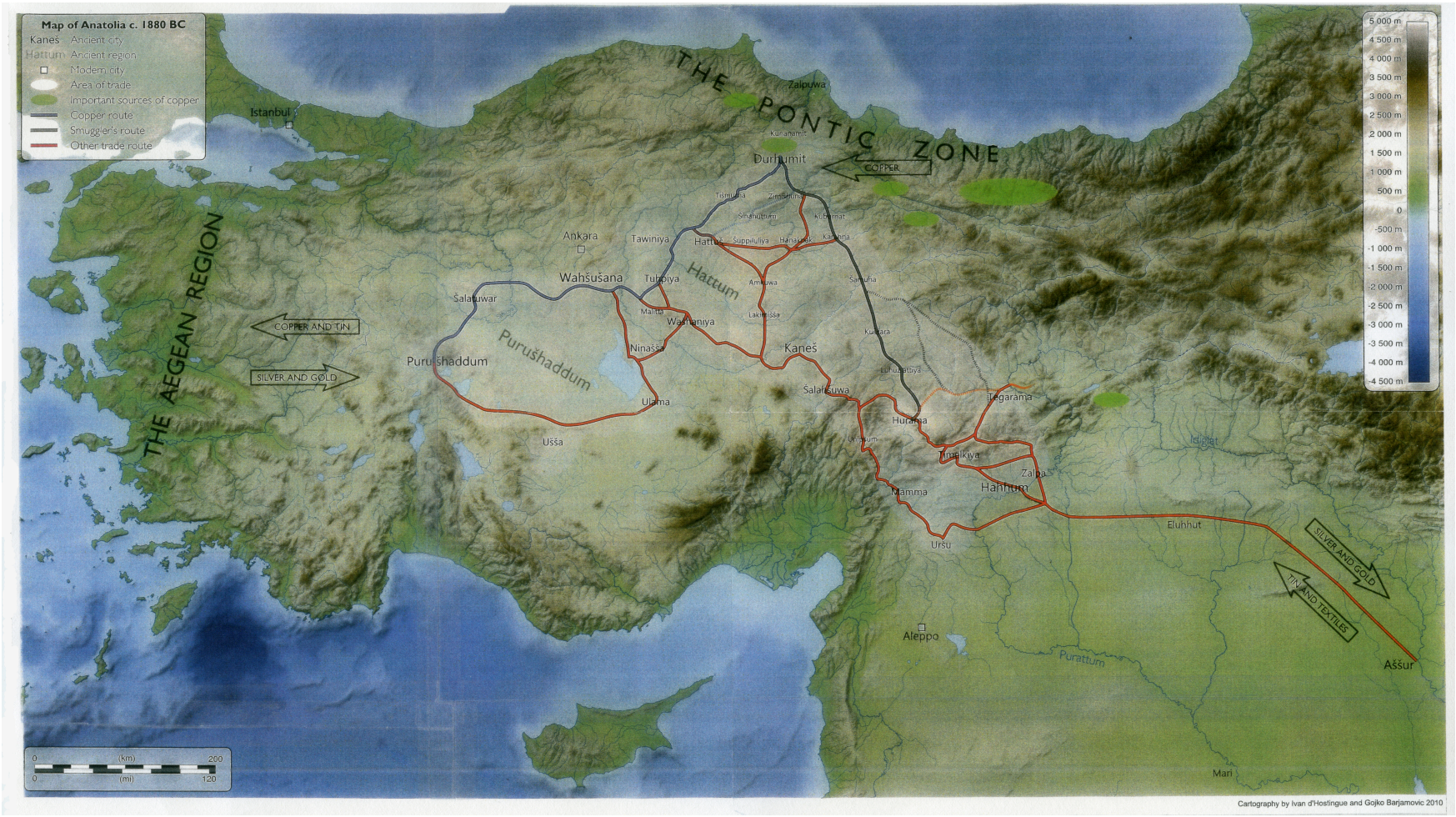
(Source: *Sekai Chizu: Western Asia* 2014, modified to show the location of sites.)



1. Tel Dan
2. Tel Kabri
3. Meron
4. Zefat
5. Ginosar
6. Tell Kurdaneh
7. Yftah’el
8. Megiddo
9. Gesher
10. Beth Shan
11. Tel Rehov
12. Aphek

Map 4. Map showing the location of the relevant archaeological sites in the southern Levant.

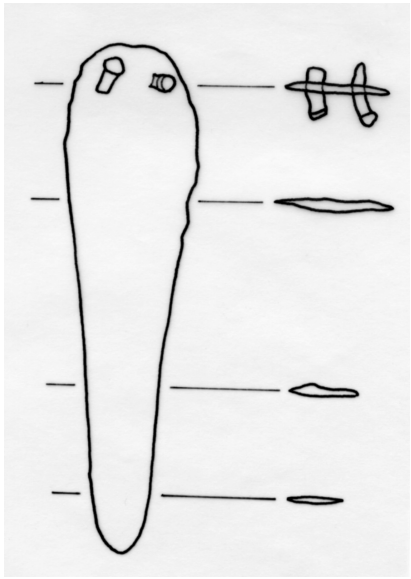
(Source: *Sekai Chizu: Western Asia* 2014, modified to show the location of sites.)



Cartography by Ivan d'Hostingue and Gojko Barjamovic 2010

Map 5. Map of the principal ancient trade routes in the Near East c. 1880 BC. (Source: Barjamovic 2011: Map of Anatolia c. 1880 BC, by courtesy of Dr Gojko Barjamovic.)

Figures



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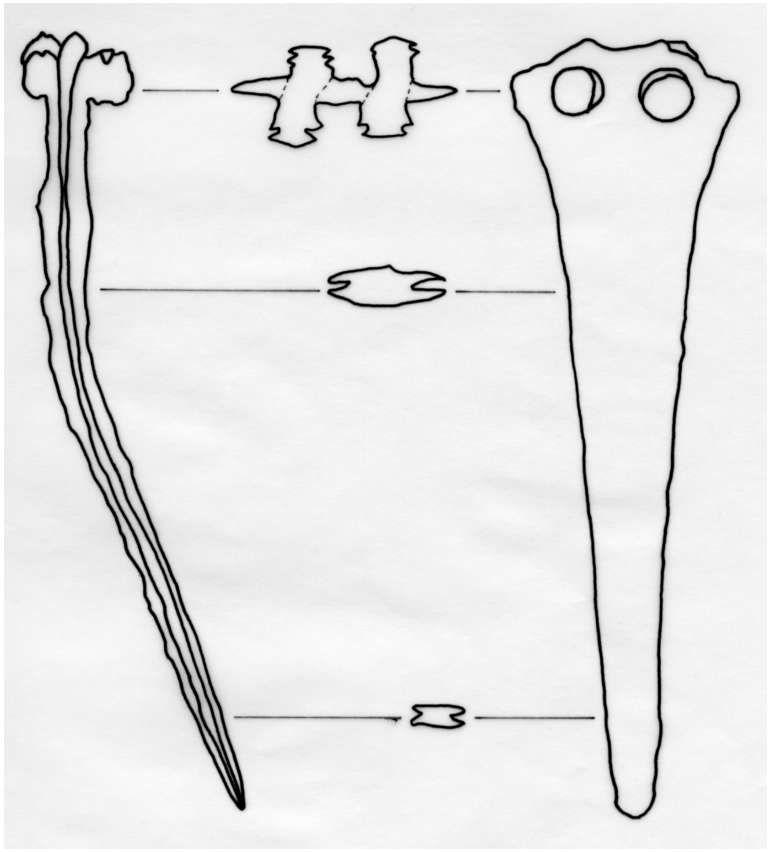

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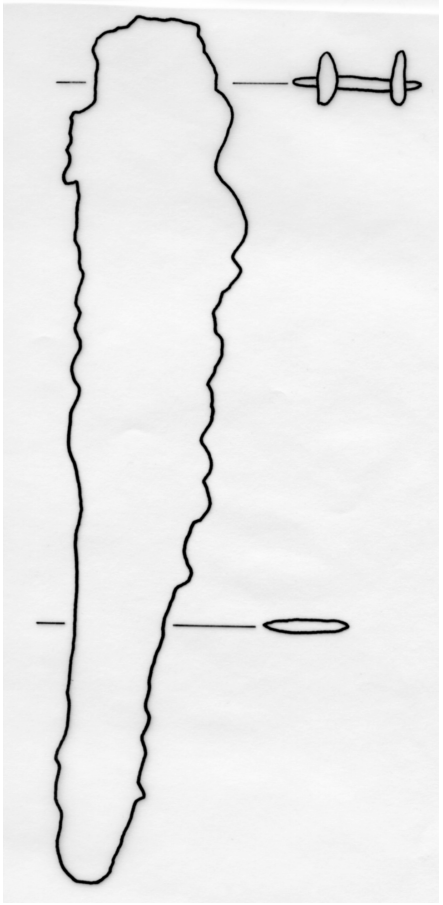
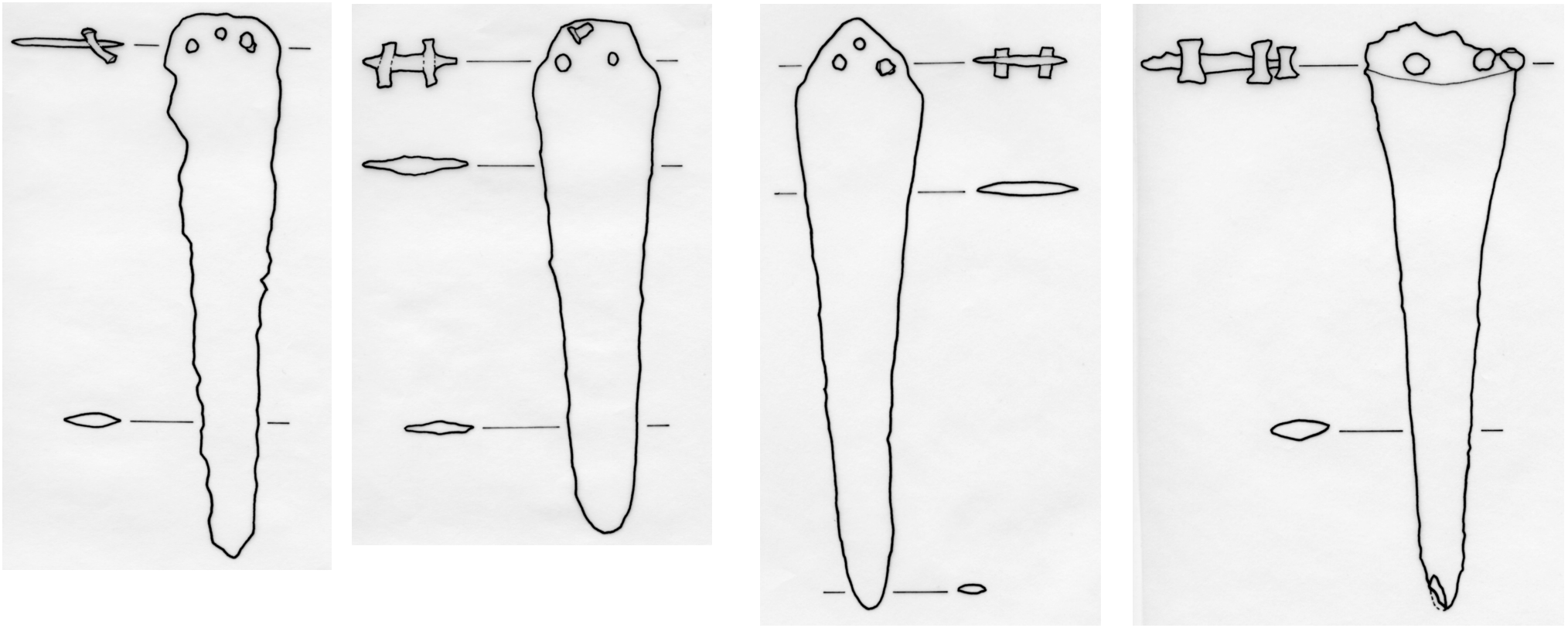


3 No. 7

Fig. 1. Kaman-Kalehöyük Daggers

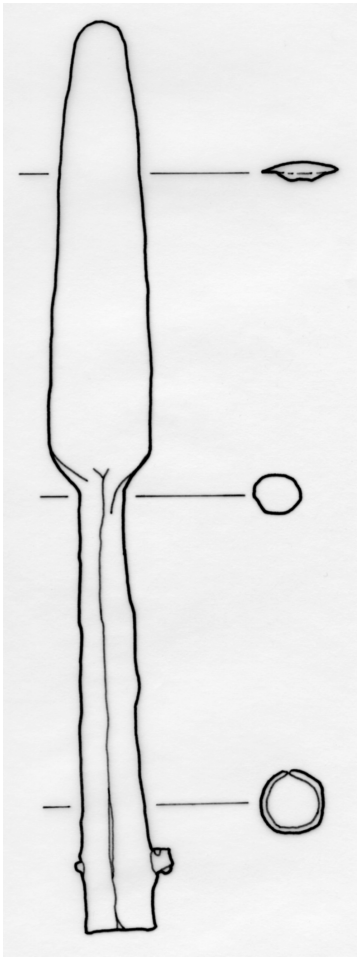
(Source: *Japanese Institute of Anatolian Archaeology* 2009)



1 No. 1 **2** No. 3 **3** No. 6 **4** No. 2

Fig. 2. Kaman-Kalehöyük Daggers

(Source: *Japanese Institute of Anatolian Archaeology* 2009)



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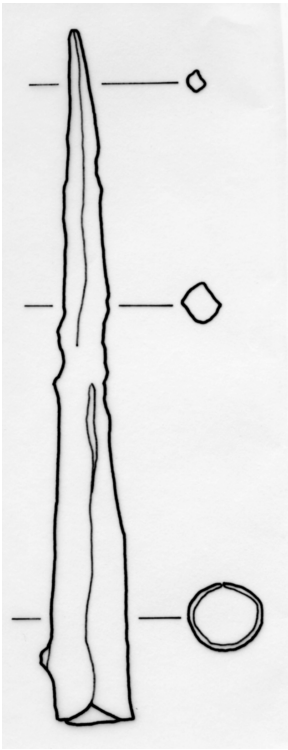

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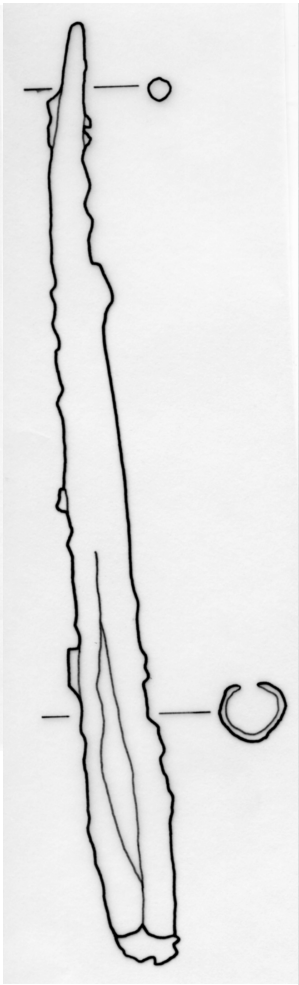

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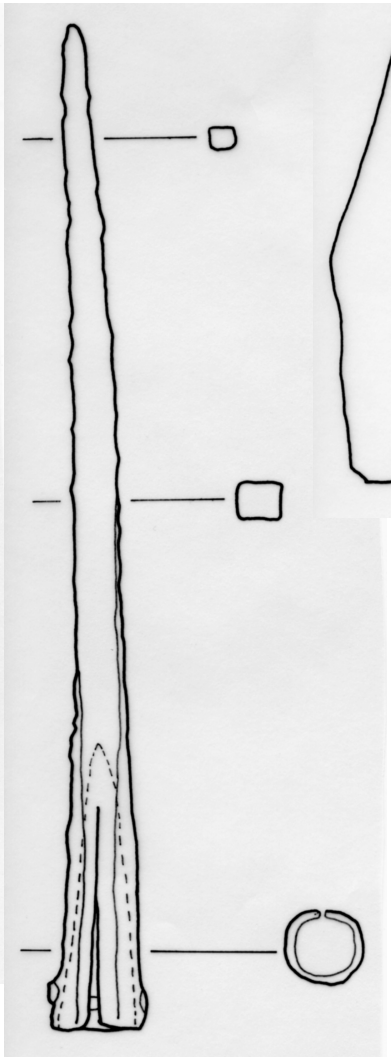

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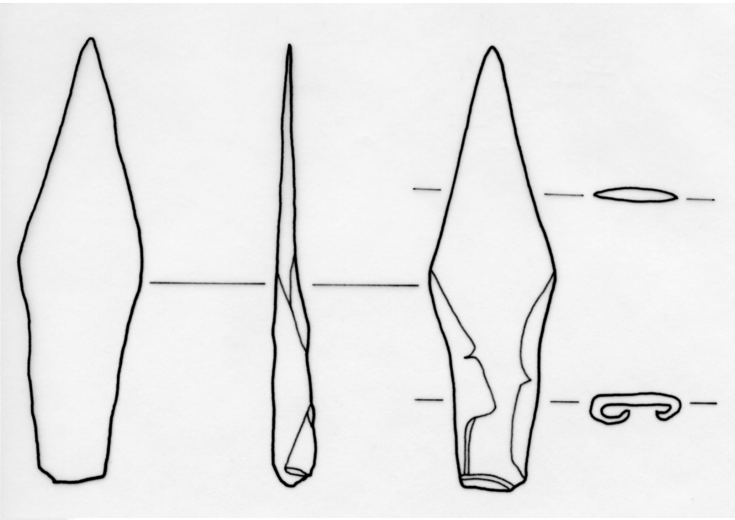
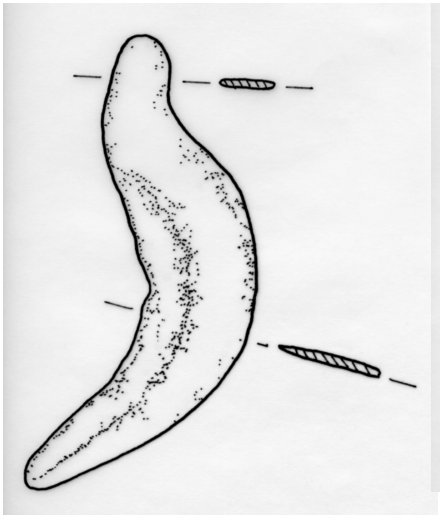


5 No. 21

Fig. 3. Kaman-Kalehöyük Spearheads

(Source: *Japanese Institute of Anatolian Archaeology* 2009)



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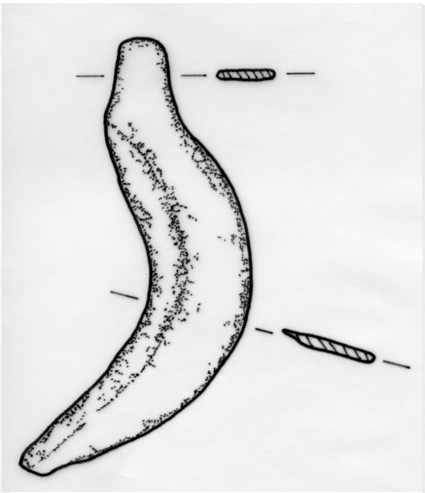

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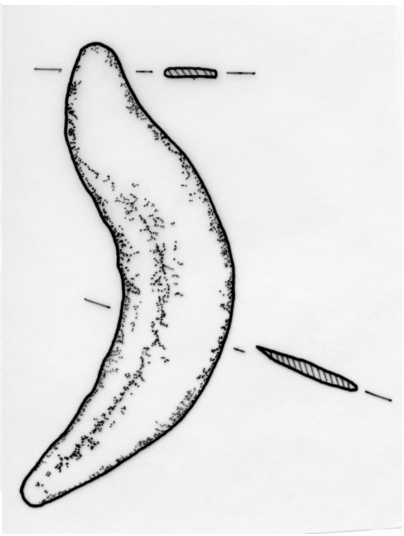

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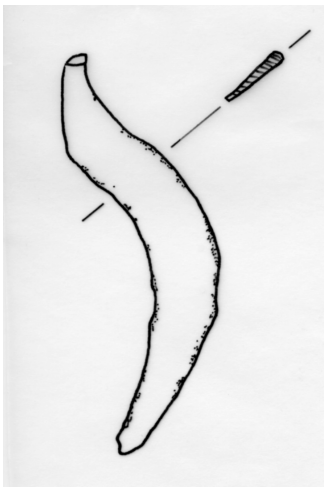

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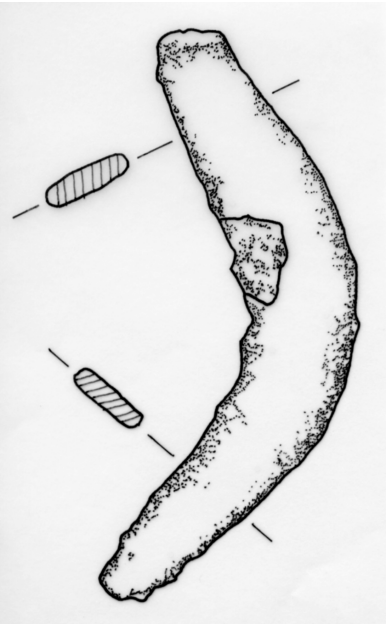

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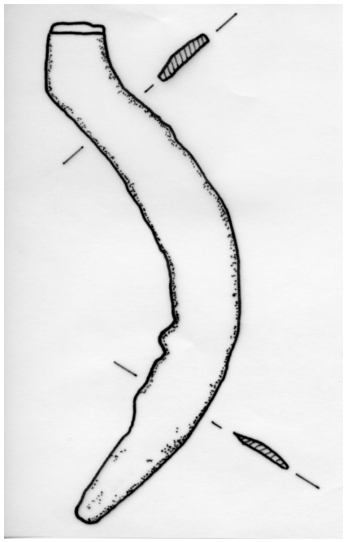

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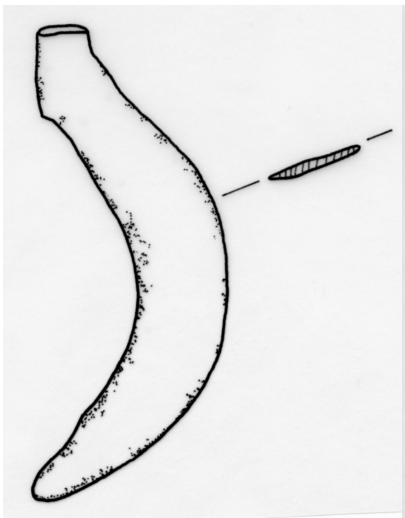

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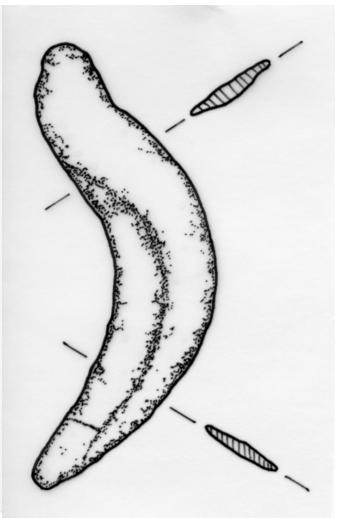

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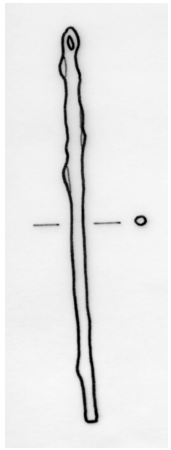
Fig. 4. Kaman-Kalehöyük Sickles

(Source: *Japanese Institute of Anatolian Archaeology* 2009)



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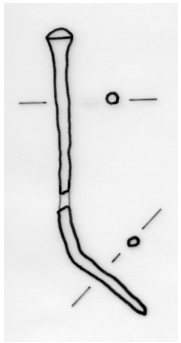

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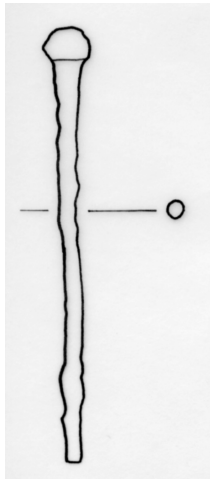

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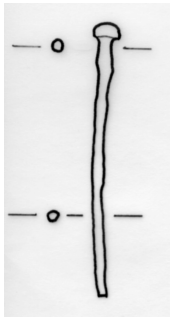

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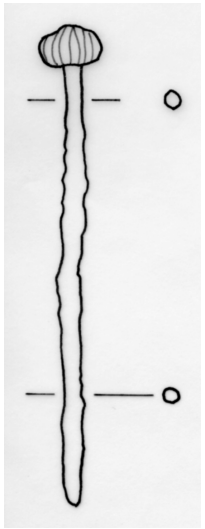

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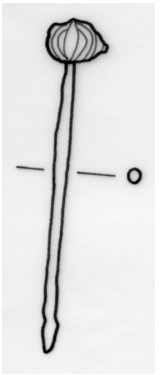

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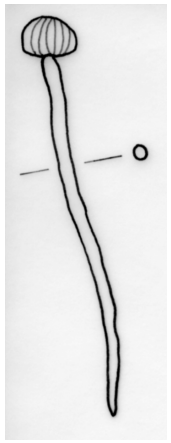

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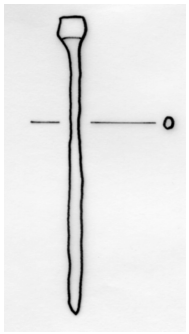

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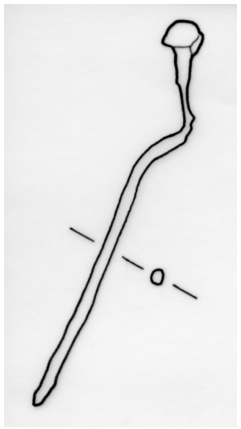

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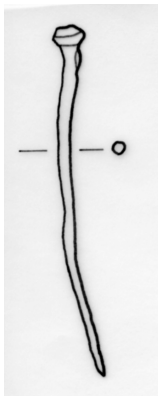
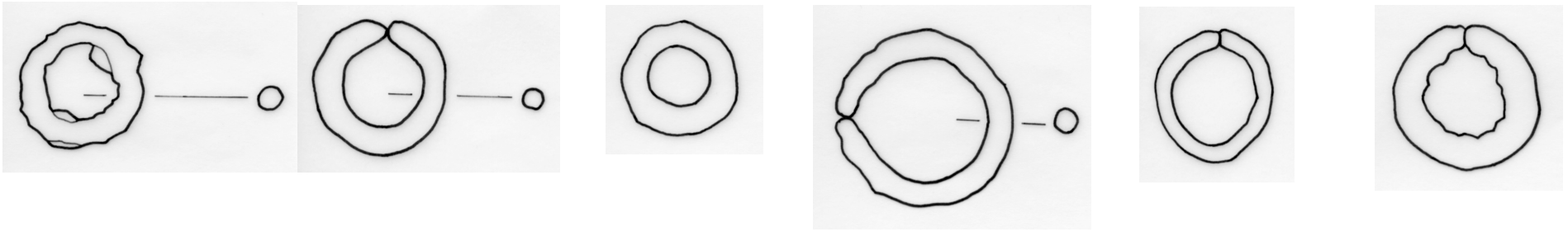


10 No. 51

Fig. 5. Kaman-Kalehöyük Needle and Pins

(Source: *Japanese Institute of Anatolian Archaeology* 2009)



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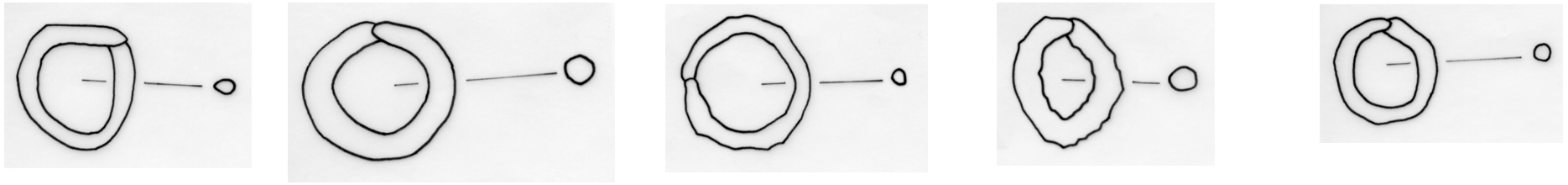

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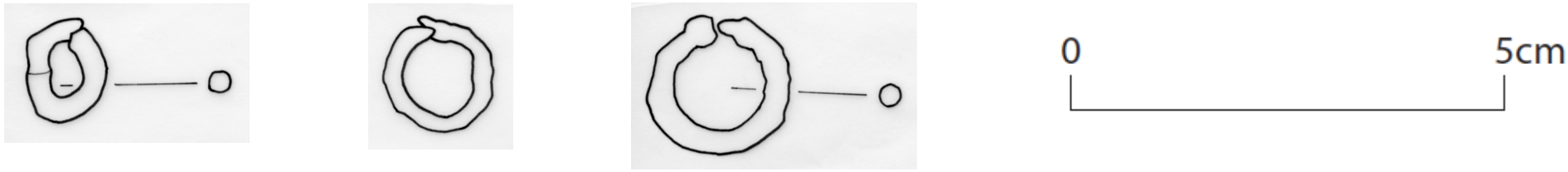
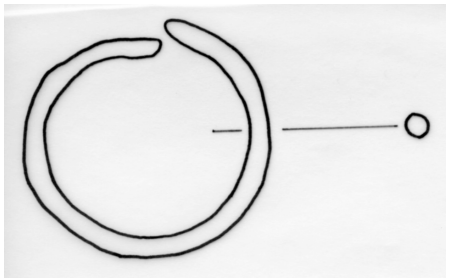


12 No. 83 **13** No. 84 **14** No. 86

Fig. 6. Kaman-Kalehöyük Rings

(Source: *Japanese Institute of Anatolian Archaeology* 2009)



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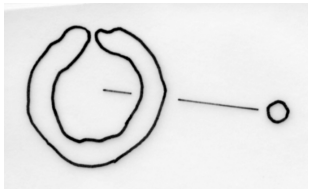

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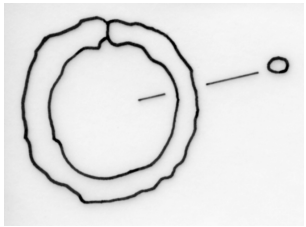

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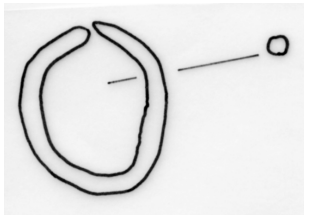

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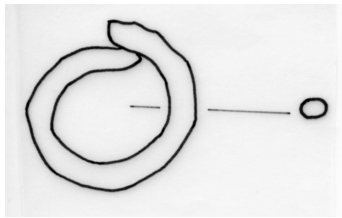

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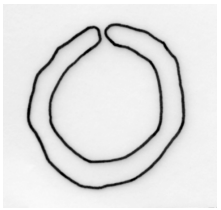

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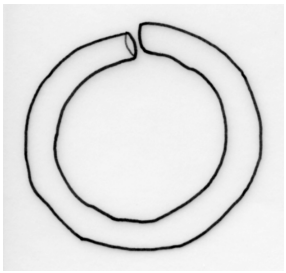


7 No. 94

Fig. 7. Kaman-Kalehöyük Rings

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

Photos

1 No. 2

2 No. 3

3 No. 4

0 10cm

4 No. 5

Photo 1. Kaman-Kalehöyük Daggers

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

1 No. 18

2 No. 20

3 Nos. 15-16

Photo 2. Kaman-Kalehöyük Spearheads and Rivets

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

0 10cm

1 Nos. 25-27

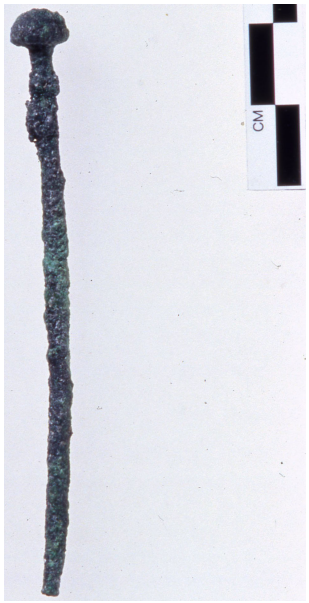
2 No. 97

3 No. 98

0 5cm

Photo 3. Kaman-Kalehöyük Sickles and Stamps

(Sources: 1: *Japanese Institute of Anatolian Archaeology* 2009; 2–3: Çelik 2006: figs 6 and 8 on 280)



1 No. 41

2 No. 50

3 No. 51

4 No. 57

5 No. 69

6 No. 86

Photo 4. Kaman-Kalehöyük Pins and Rings

(Source: *Japanese Institute of Anatolian Archaeology* 2009)

References

Archi, A. (1993) 'Bronze Alloys in Ebla', in Frangipane, M., Hauptmann, H., Liverani, M., Matthiae, P. and Mellink, M. (eds), *Between the River and over the Mountains: Archeologica Anatolica et Mesopotamia Alba Palmieri Dedicata*. Roma: Dipartimento di Scienze Storiche Archeologiche e Antropologiche dell'Antichità, Università di Roma "La Sapienza", 615–25.

Ascalone, E. and Peyronel, L. (2006) 'Early Bronze IV A at Tell Mardikh-Ebla', in Alberti, M., Ascalone E. and Peyronel, L. (eds) *Weight in Context: Bronze Age Weighing Systems of Eastern Mediterranean: Chronology, Typology, Material and Archaeological Contexts*. Proceedings of the International Colloquium, Roma 22nd–24th November 2004. Roma: Instituto Italiano di Numismatica, 49–57.

Bachhuber, C. (2009) 'The Treasure Deposits of Troy: Rethinking Crisis and Agency on the Early Bronze Age Citadel', *Anatolian Studies* 59, 1–18.

Barjamovic, G. (2011) *A Historical Geography of Anatolia in the Old Assyrian Colony Period*. The Carsten Niebuhr Institute of Ancient Near Eastern Studies. Copenhagen: University of Copenhagen, Museum Tusculanum Press.

Bayburtoğlu, B. and Yıldırım, S. (2008) 'Gold and Silver in Anatolia', in Yalçın, Ü. (ed.), *Anatolian Metal* IV. Der Anschnitt, Beiheft 21. Bochum: Deutsches Bergbau-Museum, 43–53.

Bittel, K. (1983) *Hattuscha, Hauptstadt der Hethiter: Geschichte und Kultur einer altorientalischen Grossmacht*. Köln: DuMont Buchverlag. Translated by Omura, S. and Yoshida, D. Reprint, Tokyo: Yamamoto Publications, 1991.

Blackwell, N. G. (2011) 'Middle and Late Bronze Age Metal Tools from the Aegean, Eastern Mediterranean, and Anatolia: Implications for Culture/Regional Interaction and Craftsmanship'. PhD thesis. Bryn Mawr College.

Boehmer, R. M. (1972) *Die Kleinfunde von Boğazköy: aus den Grabungskampagnen 1931–1939 und 1952–1969*. Boğazköy-Hattuša 7; Wissenschaftliche Veröffentlichung der Deutschen Orient-Gesellschaft 87. Berlin: Gebr. Mann Verlag.

Boehmer, R. M. (1979) *Die Kleinfunde aus der Unterstadt von Bogazköy Grabungskampagnen 1970–1978*. Boğazköy-Hattuša, 10. Berlin: Gebr. Mann

Verlag.

Burney, C. A. (2004) *Historical Dictionary of the Hittites*. Historical Dictionaries of Ancient Civilizations and Historical Eras 14. Lanham, MD: Scarecrow Press.

Chernykh, E. N., Avilova, L. I. and Orlovskaya, L. B. (2002) 'Metallurgy of the Circumpontic Area: From Unity to Disintegration', in Yalçın, Ü. (ed.), *Anatolian Metal* II. Der Anschnitt, Beiheft 15, Bochum: Deutsches Bergbau-Museum, 83–100.

Collon, D. (1990) *Near Eastern Seals: Interpreting the Past*. California and London: University of California Press and British Museum Publications.

Çelik, S. (2006) 'Use of a Vibro-graver Tool for Mechanical Cleaning of Copper Alloy Stamp Seals', *Anatolian Archaeological Studies* XV, 277–81.

Darvill, T. (2008) 'Bronze', *The Concise Oxford Dictionary of Archaeology*. 2nd edn. Oxford: Oxford University Press.

Dercksen, J. G. (1996) *The Old Assyrian Copper Trade in Anatolia*. Istanbul: Nederlands Histoyisch-Archaeologisch Instituut.

Dercksen, J. G. (2004) *Old Assyrian Institutions*. MOS Studies 4. Leiden: Nederlands Instituut voor het Nabije Oosten.

Dercksen, J. G. (2005) 'Metals According to Documents from Kültepe-Kanish Dating to the Old Assyrian Colony Period', in Yalçın, Ü. (ed.), *Anatolian Metal* III. Der Anschnitt, Beiheft 18. Bochum: Deutsches Bergbau-Museum, 17–34.

Deshayes, J. (1960) *Les outils de bronze, de l'Indus au Danube (IVe au IIe millénaire)*, 2 vols. Paris: Librairie orientaliste Geuthner.

Efe, T. (2002) 'The Interaction Between Cultural/Political Entities and Metalworking in Western Anatolia during the Chalcolithic and Early Bronze Ages', in Yalçın, Ü. (ed.), *Anatolian Metal* II. Der Anschnitt, Beiheft 15. Bochum: Deutsches Bergbau-Museum, 49–65.

Efe, T. (2007) 'The Theories of the "Great Caravan Route" between Cilicia and Troy: The Bronze Age III Period in Inland Western Anatolia', *Anatolian Studies* 57, 47–64.

Erkanal, H. (1977) *Die Äxte und Beile des 2. Jahrtausends in Zentralanatolien*. München: Beck.

Esin, U. (1969) *Kuantitatif Spektral Analiz Yardımıyla Anadolu'da Başlangıcından Asur Kolonileri Çağına* Kadar *Bakır* ve *Tunç Madenciliği*. Istanbul: İstanbul Üniversitesi Edebiyat Fakültesi Yayınları 1427.

Gernez, G. (2007) 'L'armement en métal au Proche et Moyen-Orient Des origins à 1750 av. J.-C., Vols I–III'. PhD thesis. Université de Paris 1 Panthéon-Sorbonne.

Grayson, A. K. (1987) *Assyrian Rulers of the Third and Second Millennium BC (to 1115BC)*. The Royal Inscriptions of Mesopotamia, Assyrian Periods Vol. 1. Toronto; London: University of Toronto Press.

Hirao, Y. and Enomoto, J. (1997) 'Chemical Analysis of Copper Objects Excavated from 8th and 9th Excavations of Kaman-Kalehöyük', *Anatolian Archaeological Studies* VI, 187–221.

Hunt, V. (2005) 'Preliminary Report on Human Remains Excavated at Kaman-Kalehöyük, Central Anatolia, in the Period 1986–1990 and in August 2004', *Anatolian Archaeological Studies* XIV, 109–17.

Hunt, V. (2006) 'Preliminary Report on Human Material Excavated at Kaman-Kalehöyük 1989, 1991, 2004 and in August 2005', *Anatolian Archaeological Studies* XV, 111–19.

Japanese Institute of Anatolian Archaeology (2009) Provided for site information and bronze finds data at Kaman-Kalehöyük from Japanese Institute of Anatolian Archaeology at Kaman, Turkey and Tokyo, Japan.

Japanese Institute of Anatolian Archaeology: Yassı Höyük (2012) Available at: http://www.jiaa-kaman.org/jp/excavation_yh_4.html (accessed 12 March 2014).

Joukowsky, M. S. (1996) *Early Turkey: An Introduction to the Archaeology of Anatolia from Prehistory through the Lydian Period*. Dubuque, IA: Kendall/Hunt.

Katayama, I. (1998) 'Human remains in the Old Assyrian Period at Kaman-Kalehöyük: Initial Report', *Anatolian Archaeological Studies* VII, 205–20.

Kawasaki, Y. (1998) 'The Smuggling Operation at Timilkia in the Old Assyrian Period', *Orient* 41(1), 1–15.

Klein, H. (1992) *Untersuchung zur Typologie bronzezeitlicher Nadeln in*

Mesopotamien und Syrien. Saarbrücken: Saarbrücker Druckerei und Verlag.

Klengel, H. (1979) *Handel und Händler im alten Orient*, Böhlau: Leipzig Koehler & Amelang. Translated by Egami, N. and Gomi, T. Reprint, Tokyo: Yamakawa Publications, 1983.

Kool, J. (2012) 'The Old Assyrian Trade Network from an Archaeological Perspective'. MA Dissertation. University of Leiden.

Kulakoğlu, F. (2011) 'Kültepe-Kaneš: A Second Millennium B.C.E. Trading Center on the Central Plateau', in Steadman, S. R. and McMahon, G. (eds), *Ancient Anatolia*. Oxford: Oxford University Press, 1012–30.

Kumagai, K., Fukuda, K. and Nakai, I. (2006) 'A Brief Report on a Magnetic Survey of the Area Surrounding Kaman-Kalehöyük in 2005', *Anatolian Archaeological Studies* XV, 203–6.

Laneri, N., D'Agostino, A., Schwartz, M., Valentini, S. and Pappalardo, G. (2006) 'A Preliminary Report of the Archaeological Excavations at Hirbemerdon Tepe, Southeastern Turkey', *Anatolica* 32, 153–88.

Laneri, N. and Schwartz, M. (2011) 'Southeastern and Eastern Anatolia in the Middle Bronze Age', in Steadman, S. R. and McMahon, G. (eds), *Ancient Anatolia*. Oxford: Oxford University Press, 337–60.

Laneri, N., Schwartz, M., Valentini, S., D'Agostino, A. and Nannucci, S. (2009) 'The Hirbemerdon Tepe Archaeological Project: The First Fourth Seasons of Archaeological Work at a Site in the Upper Tigris River Valley, SE Turkey', *Ancient Near Eastern Studies* 46, 212–76.

Larsen, M. T. (1976) *The Old Assyrian City-State and Its Colonies*, Copenhagen Studies in Assyriology, Mesopotamia 4. Copenhagen: Akademik Forlag.

Leemans, W. F. (1960) *Foreign Trade in the Old Babylonian Period as Revealed by Texts from Southern Mesopotamia.* Studia et Ddocumenta ad iura Orientis antique pertinentia 6. Leiden: Brill.

Leemans, W. F. (1968) 'Old Babylonian Letters and Economic History. A Review Article with a Digression on Foreign Trade', *Journal of Economic and Social History of the Orient* 11(2), Brill171–226.

Massimino, M. (2013) 'Metalworking in Anatolia during the Early Second Millennium B.C.: The Case of Hirbemerdon Tepe'. MA dissertation. Università degi Studi di Catania.

Masubuchi, M. and Nakai, I. (2003) 'X-ray Fluorescence Analysis of Bronze Pins from Kaman-Kalehöyük', *Anatolian Archaeological Studies* XII, 123–35.

Masubuchi, M., Sanada, T and Nakai, I. (2004) 'X-ray Fluorescence Analysis of Copper-based and Noble Metal Artefacts from Kültepe Measured at Kayseri Archaeological Museum', *Anatolian Archaeological Studies* XIII, 153–61.

Matsumura, K. (2010) *Büklükkale Kazısı 2009*. Japanese Institution of Anatolian Archaeology.

Mellaart, J. (1957) 'Anatolian Chronology in the Early and Middle Bronze Age', *Anatolian studies* VII, 55–88.

Michel, C. (2011) 'The Kārum Period on the Plateau', in Steadman, S. R. and McMahon, G. (eds), *Ancient Anatolia*. Oxford: Oxford University Press, 313–36.

Mielke, D. P. (2011) 'Key Sites of the Hittite Empire', in Steadman, S. R. and McMahon, G. (eds), *Ancient Anatolia*. Oxford: Oxford University Press, 1031–54.

Monroe, C. M. (2007) 'Money and Trade', in Snell, D. C. (ed.), *A Companion to the Ancient Near East*. Malden, MA: Blackwell, 171–84.

Moorey, P. R. S. (1982) 'The Archaeological Evidence for Metallurgy and Related Technologies in Mesopotamia, ca. 5500–2100BC', *Iraq* XLIV, 13–38.

Moorey, P. R. S. (1985) *Materials and Manufacture in Ancient Mesopotamia: The evidence of Archaeology and Art. Metals and metalwork, glazed material and glass*. BAR International Series 237. Oxford: BAR.

Muhly, J. D. (1988) 'The Beginnings of Metallurgy in the Old World', in Maddin, R. (ed.), *The Beginning of the Use of Metals and Alloys*. Cambridge, MA: MIT Press, 2–20.

Muhly, J. D. (1993) 'Early Bronze Age Tin and the Taurus', *American Journal of Archaeology* 97(2), 239–53.

Muhly, J. D. (1999) 'Copper and Bronze in Cyprus and the Eastern Mediterranean', in Pigott, V. C. (ed.), *The Archaeometallurgy of the Asian Old World*. Philadelphia, PA: University of Pennsylvania Museum of Archaeology and Anthropology, 15–25.

Muhly, J. D. (2008) 'Metal Deposits in the Aegean Region', in Yalçın, Ü. (ed.), *Anatolian Metal* IV. Der Anschnitt, Beiheft 21. Bochum: Deutsches

Bergbau-Museum, 67–75.

Muhly, J. D. (2011) ‘Metal and Metallurgy’, in Steadman, S. R. and McMahon, G. (eds), *Ancient Anatolia*. Oxford: Oxford University Press, 858–76.

Müller-Karpe, A. (1994) *Altanatolisches Metallhandwerk*. Neumünster: Wachholtz.

Nocera, G. M. D. (2010) ‘Metals and Metallurgy. Their Place in the Arslantepe Society between the End of the 4th and Beginning of the 3rd Millennium BC’, in Frangipane, M. (ed.), *Economic Centralisation in Formative States. The Archaeological Reconstruction of the Economic System in 4th Millennium Arslantepe*, SPO Vol. 3. Roma: Sapienza Università di Roma, Dipartimento di scienze storiche archeologiche e antropologiche dell’antichità, 255–74.

Omura, M. (1997) ‘Seal impression in the Assyrian Colony period at Kaman-Kalehöyük’, *Anatolian Archaeological Studies* VI, 115–33.

Omura, S. (1993) ‘Excavation at Kaman-Kalehöyük (1900) (6)’, *Museum Report in Idemitsu Museum* 83, 11–31.

Omura, S. (1994) ‘About Stratigraphy and Architectural Remains of the Level IIIc Destruction Level at Kaman-Kalehöyük (1)’, *Anatolian Archaeological Studies* III, 115–36.

Omura, S. (1995) ‘Preliminary Report on the 9th Excavation at Kaman-Kalehöyük (1994)’, *Anatolian Archaeological Studies* IV, 1–48.

Omura, S. (1996) ‘Preliminary Report on the 10th Excavation at Kaman-Kalehöyük (1995)’, *Anatolian Archaeological Studies* V, 1–69.

Omura, S. (1997) ‘Preliminary Report on the 11th Excavation at Kaman-Kalehöyük (1996)’, *Anatolian Archaeological Studies* VI, 1–66.

Omura, S. (1999) ‘Preliminary Report on the 13th Excavation at Kaman-Kalehöyük (1998)’, *Anatolian Archaeological Studies* VIII, 1–78.

Omura, S. (2000) ‘Preliminary Report on the 14th Excavation at Kaman-Kalehöyük (1999)’, *Anatolian Archaeological Studies* IX, 1–35.

Omura, S. (2001) ‘Preliminary Report on the 15th Excavation Season at Kaman-Kalehöyük (2000)’, *Anatolian Archaeological Studies* X, 1–35.

Omura, S. (2002) ‘Preliminary Report on the 16th Excavation at Kaman-Kalehöyük (2001)’, *Anatolian Archaeological Studies* XI, 1–43.

Omura, S. (2004) *Anatolia Excavation Record: For Twenty Years of*

Kaman-Kalehöyük. Tokyo: Japan Broadcasting Publishers Association.

Omura, S. (2005) 'Preliminary Report on the 19th Excavation Season at Kaman-Kalehöyük (2004)', *Anatolian Archaeological Studies* XIV, 1–54.

Omura, S. (2008) 'Problems of Cultural Chronology in Anatolia Archaeology: Excavation at Kaman-Kalehöyük', *Eastern Studies* 115, 158–68.

Omura, S. (2011) 'Kaman-Kalehöyük Excavations in Central Anatolia', in Steadman, S. R. and McMahon, G. (eds), *Ancient Anatolia*. Oxford: Oxford University Press, 1095–111.

Omura, S. (2014) *The Truth of Troia: An investigation of a real image of Schliemann from an excavation site of Anatolia*. Tokyo: Yamakawa Shuppansha Ltd.

Oren, E. D. (1971) 'A Middle Bronze Age I Warrior Tomb at Beth Shan', *Zeitschrift des Deutschen Palästina Vereins* 87, 109-39.

Orlin, L. L. (1970) *Assyrian Colonies in Cappadocia*. Studies in Ancient History I. Mouton: The Hague and Paris.

Orthmann, W. (1980) 'Kaniš', in Ebeling, E. von and Meissner, B. (eds), *Reallexikon der Assyriologie und vorderasiatischen Archäologie*. Berlin and New York: Walter de Gruyter, 369–89.

Osten, H. H. von der. (1937) *The Alishar Hüyük Seasons of 1930–32*, Part II. Chicago: University of Chicago Press.

Özbal, H., Pehlivan, N., Earl, B. and Gedik, B. (2002) 'Metallurgy at İkiztepe', in Yalçın, Ü. (ed.), *Anatolian Metal* II. Der Anschnitt, Beiheft 15. Bochum: Deutsches Bergbau-Museum, 39–48.

Özgüç, N. (1968) *Seals and Seal Impressions of Level Ib from Karum Kanish*. Türk Tarih Kurumu Yayınlarından, V. Seri, Sa.25. Ankara: Türk Tarih Kurumu Basımevi.

Özgüç, T. (1959) *Kültepe-Kaniş: New Researches at the Center of the Assyrian Trade Colonies*. Türk Tarih Kurumu Yayınlarından, V. Seri 5, Sa.19. Ankara: Türk Tarih Kurumu Basımevi.

Özgüç, T. (1986) *Kültepe-Kaniš II: New Researches at the Trading Center of the Ancient Near East*. Ankara: Türk Tarih Kurumu Basimevi.

Özgüç, T. (1999) *Kültepe-Kaniš/Neša sarayları ve mabetleri = The palaces and temples of Kültepe-Kaniš/Neša*. Ankara: Türk Tarih Kurumu Basımevi.

Özgüç, T. (2003) *Kültepe Kaniš-Neša: The Earliest International Trade Center and the Oldest Capital City of the Hittites*. Tokyo: The Middle Eastern Culture Center.

Özgüç, T. and Özgüç, N. (1953) *Türk Tarih Kurumu Tarafından Yapılan: Kültepe Kazısı Raporu 1949*. Metin dışında 8 plân ve 739 resim vardır, Türk Tarih Kurumu Yayınlarından, V. Seri-No.12. Ankara: Türk Tarih Kurumu Basımevi.

Parzinger, H. (2002) 'Das Zinn in der Bronzezeit Eurasiens', in Yalçın, Ü. (ed.), *Anatolian Metal* II. Der Anschnitt, Beiheft 15. Bochum: Deutsches Bergbau-Museum, 159–77.

Pernicka, E. (1998) 'Die Ausbreitung der Zinnbronze im 3. Jahrtausend', in Hänsel, B. (ed.), *Man and Environment in the European Bronze Age*. Kiel: Oetker-Voges Verlag, 135–47.

Philip, G. (1989) *Metal Weapons of the Early and Middle Bronze Ages in Syria-Palestine*. Parts i-ii, BAR International Series 526 (i) (ii). Oxford: BAR.

Philip, G. (2006) *Tell el-Dab'a XV: metalwork and metalworking evidence of the late Middle Kingdom and the second intermediate period*. Wien: Verlag der Österreichischen Akademie der Wissenschaften.

Postgate, J. N. (1992) *Early Mesopotamia Society and Economy at the Dawn of History*. London and New York: Routledge.

Reiter, K. (1997) *Die Metalle im Alten Orient: unter besonderer Berücksichtigung altbabylonischer Quellen*. Münster: Ugarit-Verlag.

Roaf, M. (1990) *Cultural atlas of Mesopotamia and the Ancient Near East*. New York: Facts on File.

Sagona, A. and Zimansky, P. (2009) *Ancient Turkey*. London: Routledge.

Schmidt, E. F. (1932) *The Alishar Hüyük Season of 1928 and 1929*, Part I. Chicago, IL: The University of Chicago Press.

Sekai Chizu: Western Asia (2014) Available at: http://www.sekaichizu.jp/atlas/western_asia/index.html (accessed 12 March 2014).

Stech, T. and Pigott, V. C. (1986) 'The Metals Trade in Southwest Asia in the Third Millennium B.C.', *Iraq* XLVIII, 39–64.

Veenhof, K. R. (1972) *Aspects of Old Assyrian Trade and Its Terminology*. Studia et Documenta. Ad Iura Orientis Antiqui Pertinentia X. Leiden: Brill.

Veenhof, K. R. (1985) ‘Eponyms of the “Later Old Assyrian Period” and Mari Chronology’, *Mari, Annales de Recherches Interdisciplinaires* 4, 191–218.

Veenhof, K. R. (1995) ‘Kanesh: an Assyrian colony in Anatolia’, in Sasson, J. (ed.), *Civilizations of the Ancient Near East*, Vol. II. New York: Scribner, 859–71.

Veenhof, K. R. and Eidem, J. (2008) *Mesopotamia: The Old Assyrian Period*. Orbis Biblicus et Orientalis 160/5, Annäherungen 5. Fribourg: Academic Press; Göttingen: Vandenhoeck & Ruprecht.

Walker, C. B. F. (1980) ‘Some Assyrians at Sippar in the Old Babylonia Period’, *Anatolian Studies* XXX, 15–22.

Weisgerber, G. and Cierny, J. (2002) ‘Tin for Ancient Anatolia?’, in Yalçın, Ü. (ed.), *Anatolian Metal* II. Der Anschnitt, Beiheft 15. Bochum: Deutsches Bergbau-Museum, 179–86.

Wilkinson, T. C. (2014) *Tying the Threads of Eurasia: Trans-regional Routes and Material Flows in Transcaucasia, eastern Anatolia and western Central Asia, c. 3000-1500BC*. Leiden: Sidestone Press.

Willies, L. (1993) ‘Early Bronze Age Tin Working at Kestel’, in Yener, K. A. and Vandiver, P. B. (1993) ‘Reply to Muhly, J. D., “Early Bronze Age Tin and the Taurus”’, *American Journal of Archaeology* 97(2), 255–64, 262–4.

Yakar, J. (2000) *Ethnoarchaeology of Anatolia: Rural Socio-economy in the Bronze and Iron Ages*. Tel Aviv University Monograph Ser. 17. Tel Aviv: Emery and Claire Yass publications in archaeology of the Institute of Archaeology Tel Aviv University.

Yakar, J. (2002) ‘East Anatolian Metallurgy in the Fourth and Third Millennia BC: Some Remarks’, in Yalçın, Ü. (ed.), *Anatolian Metal* II. Der Anschnitt, Beiheft 15. Bochum: Deutsches Bergbau-Museum, 15–25.

Yakar, J. (2011) ‘Anatolian Chronology and Terminology’, in Steadman, S. R. and McMahon, G. (eds), *Ancient Anatolia*. Oxford: Oxford University Press, 56–93.

Yalçın, Ü. (2003) ‘Metallurgie in Anatolien’, in Stöllner, T., Körlin, G., Steffens, G. and Cierny, J. (eds), *Man and Mining: Studies in Honour of Gerd Weisgerber on the Occasion of His 65th Birthday*. Bochum: Deutsches Bergbau-Museum, 527–36.

Yener, K. A. (2000) *The Domestication of Metals: The Rise of Complex Metal Industries in Anatolia*. Culture and History of the Ancient Near East 4. Leiden, Boston and Köln: Brill.

Yener, K. A., Geçkinli, E. and Özbal, H. (1996) 'A Brief Survey of Anatolian Metallurgy prior to 500 BC', in Demirci, Ş., Özer, A. M. and Summers, G. D. (eds), *Archaeometry 1994: Proceedings of the 29th International Symposium on Archaeometry*. Ankara: Tübitak, 375–91.

Yener, K. A. and Özbal, H. (1987) 'Tin in the Turkish Taurus Mountains: the Bolkardağ Mining District', *Antiquity* 61(232), 220–26.

Yener, K. A. and Vandiver, P. B. (1993) 'Tin Processing at Göltepe, an Early Bronze Age Site in Anatolia', *American Journal of Archaeology* 97 (2), 207–38.

Yoshida, D. (2002) 'Ein altassyrischer Text aus Kaman-Kalehöyük', *Anatolian Archaeological Studies* XI, 133–7.

Zaccagnini, C. (2001) 'A Note on Old Assyrian Weight Stones and Weight System', in Gaziani, S., Casaburi, M. C. and Cagni, L. L. (eds), *Studi sul Vicino Oriente Antico*. Napels: Instituto Universitario Orientale, 1203–13.